



**Calhoun: The NPS Institutional Archive**  
**DSpace Repository**

---

Theses and Dissertations

1. Thesis and Dissertation Collection, all items

---

1996-06

Design and implementation of a NATOPS  
qualification database management system  
for Naval Aviation Safety Officers

Martin, Terryll R.

Monterey, California. Naval Postgraduate School

---

<http://hdl.handle.net/10945/32103>

---

*Downloaded from NPS Archive: Calhoun*



Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

**Dudley Knox Library / Naval Postgraduate School**  
**411 Dyer Road / 1 University Circle**  
**Monterey, California USA 93943**

<http://www.nps.edu/library>

# NAVAL POSTGRADUATE SCHOOL MONTEREY, CALIFORNIA



## THESIS

**DESIGN AND IMPLEMENTATION OF A NATOPS  
QUALIFICATION DATABASE MANAGEMENT SYSTEM  
FOR NAVAL AVIATION SAFETY OFFICERS**

by

Terryll R. Martin

June, 1996

Thesis Advisor:

Hemant K. Bhargava

Approved for public release; distribution is unlimited.

DTIC QUALITY INSPECTED 3

19960828 083

| REPORT DOCUMENTATION PAGE  |  |   | Form Approved OMB No. 0704-0188  |  |
|--|--|---|----------------------------------|--|
| Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.  |  |   |                                  |  |
| 1. AGENCY USE ONLY (Leave blank)   | 2. REPORT DATE<br>June 1996                              | 3. REPORT TYPE AND DATES COVERED<br>Master's Thesis     |                                  |  |
| 4. TITLE AND SUBTITLE: DESIGN AND IMPLEMENTATION OF A NATOPS QUALIFICATION DATABASE MANAGEMENT SYSTEM FOR NAVAL AVIATION SAFETY OFFICERS   |  | 5. FUNDING NUMBERS                                      |                                  |  |
| 6. AUTHOR: Terryll R. Martin   |  |   |                                  |  |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)<br>Naval Postgraduate School<br>Monterey CA 93943-5000  |  | 8. PERFORMING ORGANIZATION REPORT NUMBER                |                                  |  |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)  |  | 10. SPONSORING/MONITORING AGENCY REPORT NUMBER          |                                  |  |
| 11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.   |  |   |                                  |  |
| 12a. DISTRIBUTION/AVAILABILITY STATEMENT<br>Approved for public release; distribution is unlimited.  |  |   | 12b. DISTRIBUTION CODE           |  |
| 13. ABSTRACT (maximum 200 words)<br><p>The VFA-125 Safety Office located at NAS Lemoore is burdened with the enormous administrative responsibility of managing the NATOPS qualifications for over 200 pilots and passengers. During this period of military downsizing and operational funding cuts, this responsibility will require the increased attention of a smaller staff with a limited budget. The burden of paper file management could be eased through the introduction of automated record keeping while simultaneously increasing accuracy and efficiency. The potential for non-qualified personnel to fly squadron aircraft could be eliminated.</p> <p>Based on VFA-125 Safety Office requirements, this thesis designs and implements a database management system. The primary objective is to automate the currently utilized manual NATOPS filing system to allow the squadron Safety Officer immediate access to all NATOPS-related pilot qualification data. This system will store, sort and compare data relevant to all squadron pilots while minimizing the time spent verifying the previously-used manual filing system. Additionally, the staff will be able to query reports and generate memoranda with minimal effort. The system is also analyzed to determine possible enhancements in the future. The Aviation Safety Database System is designed using dBASE III Plus and dBASE for Windows 5.0.</p> |  |   |                                  |  |
| 14. SUBJECT TERMS: Database Implementation Database Management System NATOPS Qualification Tracking System   |  |   | 15. NUMBER OF PAGES 102          |  |
|  |  |   | 16. PRICE CODE                   |  |
| 17. SECURITY CLASSIFICATION OF REPORT<br>Unclassified  | 18. SECURITY CLASSIFICATION OF THIS PAGE<br>Unclassified | 19. SECURITY CLASSIFICATION OF ABSTRACT<br>Unclassified | 20. LIMITATION OF ABSTRACT<br>UL |  |

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)  
Prescribed by ANSI Std. Z39-18 298-102

DTIC QUALITY INSPECTED 3



Approved for public release; distribution is unlimited.

**DESIGN AND IMPLEMENTATION OF A NATOPS  
QUALIFICATION DATABASE MANAGEMENT SYSTEM  
FOR NAVAL AVIATION SAFETY OFFICERS**

Terryll R. Martin  
Lieutenant Commander, United States Navy  
M.S., Naval Postgraduate School, 1990  
B.S., University of Arizona, 1980

Submitted in partial fulfillment  
of the requirements for the degree of

**MASTER OF SCIENCE IN MANAGEMENT**


from the

**NAVAL POSTGRADUATE SCHOOL  
June 1996**

Author:

  
Terryll R. Martin

Approved by:

  
Hemant K. Bhargava, Thesis Advisor

  
Douglas E. Brinkley, LCDR, SC, USN, Second Reader

  
Reuben T. Harris, Chairman  
Department of Systems Management



## **ABSTRACT**

The VFA-125 Safety Office located at NAS Lemoore is burdened with the enormous administrative responsibility of managing the NATOPS qualifications for over 200 pilots and passengers. During this period of military downsizing and operational funding cuts, this responsibility will require the increased attention of a smaller staff with a limited budget. The burden of paper file management could be eased through the introduction of automated record keeping while simultaneously increasing accuracy and efficiency. The potential for non-qualified personnel to fly squadron aircraft could be eliminated.

Based on VFA-125 Safety Office requirements, this thesis designs and implements a database management system. The primary objective is to automate the currently utilized manual NATOPS filing system to allow the squadron Safety Officer immediate access to all NATOPS-related pilot qualification data. This system will store, sort and compare data relevant to all squadron pilots while minimizing the time spent verifying the previously-used manual filing system. Additionally, the staff will be able to query reports and generate memoranda with minimal effort. The system is also analyzed to determine possible enhancements in the future. The Aviation Safety Database System is designed using dBASE III Plus and dBASE for Windows 5.0.





## TABLE OF CONTENTS

|   |    |
|---|----|
| I. INTRODUCTION .....                                     | 1  |
| A. OBJECTIVE .....  | 1  |
| B. BACKGROUND .....                                       | 1  |
| C. AVIATION SAFETY DATABASE SYSTEM .....                  | 5  |
| D. CHAPTER DESCRIPTIONS .....                             | 6  |
| II. DATABASE APPLICATION DEVELOPMENT - GENERAL .....      | 7  |
| A. PHASE I: DEFINITION PHASE .....                        | 7  |
| 1. Form Team .....  | 7  |
| 2. Define Problem .....                                   | 7  |
| 3. Establish Scope .....                                  | 7  |
| 4. Assess Feasibility .....                               | 8  |
| B. PHASE II: REQUIREMENTS PHASE .....                     | 8  |
| 1. Create Data Model .....                                | 8  |
| 2. Determine Update, Display and Control Mechanisms ..... | 8  |
| 3. Interview Users .....                                  | 9  |
| 4. Use Prototypes .....                                   | 9  |
| C. PHASE III: EVALUATION PHASE .....                      | 9  |
| 1. Select Systems Architecture .....                      | 9  |
| 2. Reassess Feasibility .....                             | 10 |

|      |  |    |
|------|--|----|
| 3.   | Reassess Requirements .....              | 10 |
| D.   | PHASE IV: DESIGN PHASE .....             | 10 |
| 1.   | Develop Database Design .....            | 10 |
| 2.   | Develop Application Design .....         | 11 |
| E.   | PHASE V: IMPLEMENTATION .....            | 11 |
| 1.   | Construct Database .....                 | 11 |
| 2.   | Build Application .....                  | 12 |
| 3.   | Testing .....                            | 12 |
| 4.   | Installation .....                       | 12 |
| 5.   | Maintenance .....                        | 13 |
| III. | SYSTEM DEVELOPMENT - ASDS .....          | 15 |
| A.   | PHASE I: ASDS DEFINITION PHASE .....     | 15 |
| B.   | PHASE II: ASDS REQUIREMENTS PHASE .....  | 17 |
| 1.   | The ASDS Entity-Relationship Model ..... | 19 |
| 2.   | The ASDS Semantic Object Model .....     | 22 |
| C.   | PHASE III: ASDS EVALUATION PHASE .....   | 26 |
| D.   | PHASE IV: ASDS DESIGN PHASE .....        | 27 |
| 1.   | ASDS Design .....                        | 27 |
| 2.   | ASDS Normalization .....                 | 27 |
| 3.   | ASDS Menus and Forms .....               | 28 |
| 4.   | ASDS Reports .....                       | 29 |

|                    |  |    |
|--------------------|--|----|
| a.                 | Backseat Rider List .....                  | 29 |
| b.                 | NATOPS Qualification Expiration List ..... | 30 |
| E.                 | PHASE V: ASDS IMPLEMENTATION .....         | 30 |
| IV.                | CONCLUSIONS .....                          | 35 |
| APPENDIX A.        | ASDS ENTITY-RELATIONSHIP DIAGRAM .....     | 39 |
| APPENDIX B.        | ASDS SEMANTIC OBJECT MODEL .....           | 41 |
| APPENDIX C.        | ASDS RELATIONAL MODEL .....                | 43 |
| APPENDIX D.        | ASDS DATA DICTIONARY .....                 | 45 |
| APPENDIX E.        | ASDS MENUS AND FORMS .....                 | 53 |
| APPENDIX F.        | ASDS NATOPS REPORTS .....                  | 59 |
| APPENDIX G.        | ASDS DBASE SOURCE CODE .....               | 63 |
| LIST OF REFERENCES | .....                                      | 87 |

|                    |    |
|--------------------|----|
| BIBLIOGRAPHY ..... | 89 |
|--------------------|----|

|                                 |    |
|---------------------------------|----|
| INITIAL DISTRIBUTION LIST ..... | 91 |
|---------------------------------|----|

## **I. INTRODUCTION**

### **A. OBJECTIVE**

This thesis designs and implements a database system for the Aviation Safety Department of U. S. Navy Strike Fighter Squadron 125 (VFA-125). The purpose of the system is to manage the Naval Air Training and Operational Procedures Standardization (NATOPS) qualifications of every individual who occupies a seat of a VFA-125 aircraft. Successful implementation of the database system would assist the squadron's Aviation Safety Officer (ASO) in his effort to ensure that only fully NATOPS-qualified personnel fly in squadron aircraft and would significantly reduce the time spent by Safety Department personnel in manually tracking each individual's multiple NATOPS qualifications. The database design takes into consideration each of VFA-125's NATOPS-related functional requirements. The primary function of the database system is to maintain the NATOPS record of each squadron aircraft occupant and to act as a repository for additional relevant data. From this database, standard reports are generated while ad hoc queries and reports are easily created.

### **B. BACKGROUND**

VFA-125, the U. S. Navy's west coast F/A-18 Fleet Replacement Squadron (FRS), is located at Naval Air Station (NAS) Lemoore, California. As one of two F/A-18 FRSs, VFA-125 is responsible for the training of over 100 Fleet Replacement Pilots (RPs) each year. To accomplish this goal, the squadron requires the services of approximately 75 F/A-18 Instructor Pilots (IPs) and over 40 F/A-18 and T-34 aircraft. Additionally, because nearly

half of VFA-125's training aircraft contain two seats (all other NAS Lemoore F/A-18 squadrons utilize only single seat aircraft), the squadron is tasked with providing backseat incentive flights to other squadron's enlisted military personnel, nonmilitary media personnel as well as high-ranking domestic and foreign government officials.

Each individual who occupies a seat of an F/A-18 or T-34 aircraft (with the intent of flight) must be fully qualified in accordance with OPNAV Instruction 3710.7Q [Ref. 1]. Because the qualification for flight requirements vary depending on the aircraft occupant's flight-related duties, it is the squadron's ASO who is charged with verifying the NATOPS flight status of every potential aircraft occupant prior to aircraft entry. Should an unqualified individual occupy a squadron aircraft and an accident occur, the ensuing Judge Advocate General investigation could find the squadron's Commanding Officer responsible for lack of oversight.

The VFA-125 Safety Department includes the ASO, the NATOPS Officer, the Ground Safety Officer, the Model Manager, the Aviation Safety Petty Officer (ASPO) and various administrative support personnel. The ASO acts as the squadron Safety Department Head and, in concert with the NATOPS Officer and ASPO, continuously monitors the status of each individual's NATOPS qualifications. Prior to database system implementation, tracking of NATOPS qualification paperwork was haphazard and time intensive. NATOPS records were kept in file drawers and NATOPS documents were filed at random intervals. A NATOPS cover sheet was maintained inside each NATOPS jacket and annotated as changes occurred. To verify NATOPS qualifications, each jacket was individually pulled and

its multiple documents carefully scrutinized. As a result, it was not uncommon for individuals to fly in squadron aircraft with expired NATOPS qualifications.

To assist the reader in the ensuing description of database system design and implementation, the following are some brief explanations of terminology as related to naval aviation in general and VFA-125 in particular:

*Aircraft Occupant* is any individual who occupies any seat of a VFA-125 F/A-18 or T-34 aircraft. The front seat must be occupied by a designated IP or RP. The aft seat may be occupied by an IP, RP, Naval Flight Officer (NFO), Flight Surgeon, Flight Physiologist or Selected Passenger.

*Designated Aircrew* include all personnel who are in a flight status. In VFA-125, this encompasses IPs, RPs, NFOs, Flight Surgeons and Flight Physiologists. [Ref. 1: p. 1-3]

*Flightcrew* include those aircrew who perform crew functions on board the aircraft in support of the assigned mission. These personnel include IPs, RPs and NFOs. [Ref. 1: p. 1-5]

*Selected Passengers* are those aircraft occupants who are not designated as aircrew and who perform no official flightcrew duties. Because VFA-125's F/A-18s are equipped with ejection seats and its T-34s are equipped with personal oxygen systems, all passengers in squadron aircraft must be NATOPS qualified. [Ref. 1: p. 1-7]

*Flight Physicals* are required for all aircrew on an annual basis. The flight physical may be initiated the month prior to the birth month but no later than the last day of the birth month. Failure to initiate a flight physical results in mandatory suspension of flight duties.

Flight physicals for selected passengers are also mandatory and are valid for one year from date of issue. [Ref. 1: pp. 8-12, 8-20]

*Water Survival Training* is mandatory for all aircrew and remains valid for four years. Water survival training is required for selected passengers but has a duration of 36 months. [Ref. 1: pp. 8-17, 8-18]

*Flight Physiology Training* is mandatory for all aircrew and, like water survival training, remains valid for four years. Physiology and water survival training usually are scheduled in tandem but they may occur at separate times. Flight physiology training is mandatory for selected passengers and remains valid for three years. [Ref. 1: p. 8-15]

*Emergency Egress Training* is mandatory for all aircraft occupants. In VFA-125, ejection seat training is required for F/A-18 occupants and bailout training is required for flight in T-34 aircraft. In each case, training is valid for twelve months from the last day of the month in which the training occurred. [Ref. 1: p. 8-10]

*Instrument Ratings/Qualifications* are mandatory for all pilots/NFOs who perform flight duties. These instrument ratings are valid for one year from the end of the month in which qualification occurred. Only one instrument rating/qualification is required even if a pilot/NFO is qualified to fly multiple aircraft types. A pilot's failure to maintain a valid instrument rating will result in his appearance before a field naval aviation evaluation board. [Ref. 1: pp. 13-1, 13-3]

*NATOPS Evaluations* ensure that aircrew understand and comply with each aircraft's standard operating procedures. They are mandatory for all pilots/NFOs who perform flight duties and are required for each type of aircraft flown. In VFA-125, a pilot could have



NATOPS qualifications in both the F/A-18 and T-34. These evaluations are valid for twelve months from the end of the month in which the evaluation is performed. [Ref. 2: p. 10-1, Ref. 3: p. X-22-1]

*NATOPS Manuals* provide written descriptions of aircraft standard operating procedures. Each pilot/NFO is issued a set of these manuals. Because of the large number of aircrew assigned to VFA-125, the squadron's Safety Department maintains over 1000 NATOPS manuals. It is the ASO's responsibility to ensure that issued manuals are returned upon a pilot's or NFO's departure from VFA-125.

### **C. AVIATION SAFETY DATABASE SYSTEM**

The Aviation Safety Database System (ASDS) was designed to reduce the ASO's time-intensive NATOPS qualification verification process and reduce the administrative NATOPS qualification tracking burden on the ASO's Safety Department personnel while making the storage and retrieval of critical information more timely and efficient. Additionally, the ability to quickly sort through the entire squadron's NATOPS qualification records significantly reduces the time required to build and disseminate needed reports. To accomplish this increase in efficiency, an in-depth study was performed on the needs of the VFA-125 ASO and his department.

Because the VFA-125 Safety Department was equipped solely with a Zenith 248 computer, the ASDS was originally built utilizing Ashton-Tate's dBASE III Plus. Since ASDS completion, the Safety Department has acquired a Windows-capable IBM compatible personal computer (PC). The ASDS has been modified to operate effectively in Borland's dBASE for Windows version 5.0. Many iterations and revisions of the ASDS were

accomplished through continuous reassessment of VFA-125's NATOPS program and recommendations from both the ASO and ASPO. ASDS is menu driven and designed for ease of use by those personnel unfamiliar with either databases in general or dBASE in particular.

#### **D. CHAPTER DESCRIPTIONS**

Chapter II is a general description of the database development methodology considered in developing the VFA-125 NATOPS qualification automated information system.

Chapter III will discuss the ASDS application development process and the phases discussed above.

Chapter IV will discuss conclusions and recommendations. This chapter will provide a short summary of the thesis, identify future ASDS enhancements and possible areas for system growth.

Appendices A through G provide supporting diagrams and documentation to the previously described text. The appendices include the ASDS entity-relationship model, semantic object model, relational model, data dictionary, menus and forms, reports and dBASE source code.

## **II. DATABASE APPLICATION DEVELOPMENT - GENERAL**

The ASDS was developed using the five standard phases of the Systems Development Life Cycle (SDLC). These five phases include the definition phase, requirements phase, evaluation phase, design phase and implementation phase. This chapter will discuss the generic requirements of each phase. [Ref. 4: pp. 672-683]

### **A. PHASE I: DEFINITION PHASE**

#### **1. Form Team**

In essence, the definition phase determines what a database system will do. The initial action is to form a working team of individuals who will build the database system. Special attention should be paid to each team member's strengths and level of previous experience. The team should be large enough to accomplish all associated tasks but not so large as to unduly influence the overall developmental process. [Ref. 5: p. 3]

#### **2. Define Problem**

Once team formation is complete, the problem to be solved must be defined. A problem is a perceived difference between what is and what ought to be. Since problems are perceptions, each individual's definition of the problem may vary greatly. The team must reach some agreement as to the problem's definition as well as establish the criteria for a successful solution. [Ref. 5: p. 3]

#### **3. Establish Scope**

Establishing the scope of the problem is defining the limitations of how the team can help solve a specific portion of the defined problem. The system's ultimate users may desire

too many features or possibly too few. The task of defining the scope establishes proposed parameters for both developers and users. [Ref. 5: p. 3]

#### **4. Assess Feasibility**

Once the system development team has been formed, the problem completely defined and the scope established, it is necessary to determine the overall feasibility of the entire project. Areas to consider are cost, time and schedule requirements. Upon definition phase conclusion, the database system development team should report back to the end user for feedback. Improvements and revisions can be made at this time. [Ref. 5: p. 4]

### **B. PHASE II: REQUIREMENTS PHASE**

#### **1. Create Data Model**

A requirements phase is necessary to build on the specifics laid out in the definition phase. The expansion of the definition phase is done through employment of the user's requirements and data models. The user's data model describes the objects that are to be stored in the database and denotes their relationship to one another as well as their overall structure. The requirements data model represents the basis for database design. The model should be a "macro view" of the input documents, processes required and the general output desired by the ultimate user. [Ref. 5: p. 4]

#### **2. Determine Update, Display and Control Mechanisms**

Within the requirements phase, it is necessary to establish functional components or mechanisms to update, display and control the database. These mechanisms will define the means by which the user will maintain a current database and retrieve useful information from it. [Ref. 5: p. 4]

### **3. Interview Users**

Users are always the ultimate authority on system application requirements. The development team will use its experience, background and knowledge to assist users in the proper formulation of their requests regarding system inputs, outputs and constraints. The team must also help the users set achievable goals based on plausible user needs. [Ref. 5: p. 4]

### **4. Use Prototypes**

Mock-ups of forms, reports and menus can be developed to help users envision the future product. The purpose of these prototypes is to open an avenue for dialogue between team members and users. With candid feedback, the development team may be able to extract additional requirements from the users and further refine the system in its early stages.

The result of this phase could be a data-flow diagram, an entity-relationship diagram, a semantic object diagram, various prototypes, a summary of update, display and control mechanisms or any combination of these. [Ref. 5: p. 5]

## **C. PHASE III: EVALUATION PHASE**

### **1. Select Systems Architecture**

The evaluation phase begins after all the data collected in the requirements phase is compiled and considered. During this phase, a systems architecture should be selected and alternatives should be considered to ensure the ideal match is made for the user. The system initially selected may be excluded due to new information exposed in the requirements phase. [Ref. 5: p. 5]

## **2. Reassess Feasibility**

After deciding the specifics of the hardware to be used, a reassessment of its feasibility should occur. This reassessment should be more specific than that considered in the definition phase. During the reassessment, considerations should include expenses, overall scope and timing as well as any new requirements. [Ref. 5: p. 5]

## **3. Reassess Requirements**

If it appears that anticipated solutions to any of the evaluated areas cannot be achieved by the development team, the users should be notified and an effectively implemented feedback loop should ensure that the overall project becomes achievable. Required revisions may be as simple as an adjustment to schedules, tweaking the budget or a larger reduction in physical specifications. Another consideration may be the possible deferral or exclusion of actions. [Ref. 5: pp. 5-6]

# **D. PHASE IV: DESIGN PHASE**

## **1. Develop Database Design**

Application and database design will take place within the design phase. Here the task is to meet the users' specific needs through designed programs and procedures; specifications for hardware are also written during this phase. Files are established (relation tables), data items (attributes) are defined and relationships are correlated between objects. Relationships between objects can be simply one-to-one, one-to-many or a more complex many-to-many. Normalization should be conducted to ensure that there are no anomalies between relations. Elimination of anomalies occurs by splitting the relation into two or more separate relations,

each containing a single theme. Objects may be a basic, simple object or a grouping of objects called an aggregation. [Ref. 5: p. 6]

## **2. Develop Application Design**

Within the design phase, the database and applications are created. An application is a collection of menus, forms, reports and queries that enable users to interact with and update the system. Mechanisms by which the system is to be implemented and updated will be developed and the program's logic will be decided. This is the ideal time to detect errors prior to building the system. Beyond this point, finding errors will be difficult and correcting them expensive.

The output of this design phase could include a relation diagram, relation definitions, menu hierarchy and pseudo code for each menu and sub-menu. [Ref. 5: p. 6]

## **E. PHASE V: IMPLEMENTATION**

### **1. Construct Database**

The final phase is implementation. The task is to build the system according to the specifications decided up to this point. Users' needs must be isolated at this juncture. Any further requirements will adversely affect the system's development. Programming usually occurs at this point. Using the data definition subsystem of the engineered database management system (DBMS), the design is converted to fit the user's requirements. The goal is to construct the system while strictly adhering to the design. Hardware is installed, programs are developed, procedures are documented and office staff and users are trained. [Ref. 5: p. 7]

## **2. Build Application**

Forms, reports and menus need to be built through application development as well as construction of transaction processing programs. [Ref. 5: p7]

## **3. Testing**

An often ignored area of implementation is testing. Testing verifies that any errors which may have been created in the modeling or implementation phases are discovered and that the system performs those functions as designed by the user. This testing can be accomplished in a number of ways. The testing should not be isolated to a specific phase; rather it should be distributed throughout the entire project as it progresses. The types of testing vary greatly depending on the complexity of the system and its developers. [Ref. 5: p. 7]

## **4. Installation**

Installation is one of the final steps in implementation. Installation can occur in either of four strategies. The first of these is the parallel strategy whereby both the old and new systems operate side by side until it is proven that the new system is working properly. The second is the pilot strategy where only a small piece of the function or office is converted to the new system. The new system operates in one area with the old system remaining in place until conversion occurs at a later date. Phase-in is the third strategy. Here, the old system is gradually replaced by the new system. The final strategy is direct cutover. Complete conversion takes place immediately upon system availability with the new system replacing the old all at once.



User and operator guides and documentation are generated as well in this phase. Training is recommended to ensure a smooth transition from the old system to the new one. The training should be complete such that users and system administrators are familiar with what the system can and will do for them. [Ref. 5: pp. 7-8]

## **5. Maintenance**

Maintenance requires the verification of three areas:

- Correction of errors discovered during system operation.
- Implementation of modifications to the system due to user requests or changes in requirements after implementation.
- The implementation of performance enhancements and improvements to user interfaces.

It is important to maintain the system with minimal disruption to the users; therefore, a "high degree of independence" is desired so as to insulate applications from the physical organization of the database. [Ref. 5: p. 8]



### **III. SYSTEM DEVELOPMENT - ASDS**

#### **A. PHASE I: ASDS DEFINITION PHASE**

The development team consisted of the author, the VFA-125 NATOPS Officer and the VFA-125 ASPO. The squadron's NATOPS Officer and ASPO were selected as team members due to their in-depth knowledge of the Safety Office's business rules; particularly their familiarization with OPNAV 3710.7Q [Ref. 1].

The fundamental problem experienced by the squadron's Safety Office was the tracking of mandatory NATOPS-related qualifications for all squadron aircraft occupants. The Safety Office's manual NATOPS qualification tracking system required the ASPO and his assistants to file NATOPS-related qualification forms in each aircraft rider's NATOPS Flight Personnel Training/Qualification Jacket. Once these NATOPS qualification forms were entered in the Qualification Jacket, the Jacket's NATOPS Qualification Certification page was annotated with the change and the Jacket was replaced in its filing cabinet. Unless there was a specific reason to pull a particular NATOPS Jacket, no one regularly ensured that each aircraft occupant was fully NATOPS qualified until a quarterly review was completed. It was during these reviews that many NATOPS qualifications were discovered to be expired. It was the desire of the squadron ASO to implement a DBMS which would allow Safety Department personnel to track each aircraft occupant's NATOPS qualifications on a daily basis. The ultimate goal was to eliminate the possibility of any unqualified individual becoming airborne in a squadron aircraft.

In Addition, the hours expended by the Safety Office's staff in tracking the volumes of NATOPS-related paperwork were excessive. With the continuing trend towards downsizing in today's Navy, the ability to increase oversight of the NATOPS qualification tracking program while simultaneously reducing manpower requirements greatly increased the ASO's interest in the benefits of DBMS implementation.

As a result, the ASO requested that a feasibility study be initiated to design a DBMS that could be updated on a daily basis, be maintained by the ASPO and his assistants, be available to all Safety Office personnel, ensure security of NATOPS-related information and be installed on a single IBM compatible 286 PC.

The scope of the project was to construct a DBMS that could track the numerous NATOPS forms required to ensure that an individual was qualified to fly in a squadron aircraft. If this NATOPS-related information could be stored in conjunction with associated data regarding each aircraft occupant's military service, the task of managing this information could be made much more efficient. Reports could be generated automatically and thus greater emphasis could be placed on managing each aircraft occupant's NATOPS qualification situation rather than merely reacting to it.

The goal of Safety Office DBMS implementation was to track information in the following major areas:

- Egress training
- Flight physicals
- Flight physiology
- Water Survival

- Annual NATOPS evaluations
- Annual Instrument ratings/qualifications
- NATOPS manual assignments

No additional funding was available for Safety Department DBMS implementation.

As a result, no additional hardware or software purchases were authorized. The then available 286 IBM compatible PC included dBASE III Plus as the only available database application. At the time of ASDS project initiation, a request was made by the ASO for a second, upgraded 486 PC utilizing the Windows operating system.

The many benefits of ASDS implementation included:

- Reduction in man-hours by the introduction of automation.
- Time savings for Safety Department staff to perform other office functions due to the more efficient retrieval of NATOPS-related data.
- Data entries could be more easily reviewed resulting in rapid verification and greater data integrity.
- Increased ability to sort, query and conduct analysis of stored data.

## **B. PHASE II: ASDS REQUIREMENTS PHASE**

Prior to initiation of ASDS design, a decision regarding database development style and schema design was required. The options included the top-down, bottom-up, inside-out and mixed strategies. The inside-out strategy was selected because the order of refinements is disciplined (as in the top-down approach) however, this strategy allows the most evident concepts to be fixed first with subsequent navigation toward more distant ones. This strategy

allowed Aircraft Occupant to be identified as the driving factor in modeling the ASDS. [Ref. 6: pp. 66-76]

The main objective of those Safety Department personnel interviewed was to identify and automate the minimum NATOPS-related information required to ensure that no one flew in a squadron aircraft while not fully qualified. In addition, the rapid entry and retrieval of each aircraft occupant's NATOPS-related data was desired. Interviews were conducted with each potential Safety Department ASDS user. Those interviewed were the NATOPS Officer, the ASPO and each Safety Department clerk. ASDS-related discussion items were geared toward improving overall office efficiency. Due to the man-hour intensive manual filing system, aircraft occupant information was often difficult to locate or impossible to retrieve in a timely fashion. Unless a NATOPS Jacket was pulled and each qualification form scrutinized, no central information system was present to identify "out-of-qual" personnel. No back up files existed. Additionally, no information distribution system was in place to notify squadron personnel that they were no longer NATOPS qualified or soon would not be. As a result, the squadron's Schedules Officer could not preplan NATOPS qualification flights or classes in advance.

The Safety Department staff requested the following reports:

- NATOPS qualification expiration report.
- List of authorized NATOPS qualified passengers.

Utilizing the experience of the ASO, NATOPS Officer and ASPO, further user requirements were developed by; (1) determining which NATOPS-related forms were most often employed and (2) examining the properties of desired Safety Office recurring reports

with particular emphasis on increasing overall department efficiency. Safety Department use of current NATOPS qualification forms is mandated by OPNAV 3710.7Q. Despite multiple redundancies located throughout these required NATOPS forms, the ASDS was created to streamline their completion and subsequent data entry into the DBMS. The new ASDS-generated NATOPS qualification report formats were constructed for both their ease of use and potential for rapid information dissemination.

Through multiple interviews with Safety Office personnel, scrutiny of individual NATOPS Training Jackets and a study of OPNAV 3710.7Q, the design team developed two data models. The first was the entity-relationship (E-R) model, the second was the semantic object model (SOM). Because of the team's inside-out strategy of schema design and the strategy's combination of top-down (E-R related) and bottom-up (SOM related) database design approaches, both types of data models were constructed. A discussion of each model as it applies to the ASDS follows. The E-R model is displayed in Appendix A; the SOM appears in Appendix B.

#### **1. The ASDS Entity-Relationship Model**

Through numerous discussions with Safety Office personnel, the following 18 entities were identified as central to the NATOPS qualification tracking evolution:

- SQUADRON AIRCRAFT OCCUPANT
- DESIGNATED AIRCREW (NON-FLIGHTCREW)
- DESIGNATED AIRCREW (FLIGHTCREW)
- SELECTED PASSENGER
- FLIGHT SURGEON

- FLIGHT PHYSIOLOGIST
- INSTRUCTOR PILOT
- REPLACEMENT PILOT
- EGRESS TRAINING
- FLIGHT PHYSICAL
- 48 MONTH FLIGHT PHYSIOLOGY
- 48 MONTH WATER SURVIVAL
- 36 MONTH FLIGHT PHYSIOLOGY
- 36 MONTH WATER SURVIVAL
- ANNUAL NATOPS EVALUATION
- ANNUAL INSTRUMENT RATING
- NATOPS MANUALS
- CLASS

The SQUADRON AIRCRAFT OCCUPANT entity is central to the E-R model because only one individual can occupy any given seat in a squadron aircraft. This entity has three subtypes: DESIGNATED AIRCREW (NON-FLIGHTCREW), DESIGNATED AIRCREW (FLIGHTCREW) and SELECTED PASSENGER. These subtypes are mutually exclusive indicating that each SQUADRON AIRCRAFT OCCUPANT entity must belong to only one subtype.

The ASDS E-R model indicates that the entities FLIGHT SURGEON and FLIGHT PHYSIOLOGIST are mutually exclusive subtypes of DESIGNATED AIRCREW (NON-FLIGHTCREW). These entities represent personnel designated as aircrew who perform no



airborne flightcrew duties. The entities INSTRUCTOR PILOT and REPLACEMENT PILOT are mutually exclusive subtypes of supertype DESIGNATED AIRCREW (FLIGHTCREW). Members of these subtypes actually perform required flight duties while airborne. The subtype SELECTED PASSENGER represents those SQUADRON AIRCRAFT OCCUPANTS who are neither designated as aircrew nor perform any flight duties.

SQUADRON AIRCRAFT OCCUPANT has a relationship with EGRESS TRAINING, FLIGHT PHYSICAL and NATOPS MANUALS. The maximum cardinality of the EGRESS TRAINING relationship is 1:N because an individual may receive egress training in both the T-34 and F/A-18 aircraft. FLIGHT PHYSICAL's existence is dependant on and therefor is a weak entity of SQUADRON AIRCRAFT OCCUPANT. Each SQUADRON AIRCRAFT OCCUPANT must have one FLIGHT PHYSICAL. NATOPS MANUALS has a 1:N relationship with SQUADRON AIRCRAFT OCCUPANT because some SQUADRON AIRCRAFT OCCUPANT's are issued no NATOPS MANUALS while others are issued many.

Each SELECTED PASSENGER has a 1:1 relationship with 36 MONTH FLIGHT PHYSIOLOGY and 36 MONTH WATER SURVIVAL. DESIGNATED AIRCREW (NON-FLIGHTCREW) and DESIGNATED AIRCREW (FLIGHTCREW) have a 1:1 relationship with 48 MONTH FLIGHT PHYSIOLOGY and 48 MONTH WATER SURVIVAL. No one may become airborne in a Navy aircraft without these qualifications.

ANNUAL NATOPS EVALUATION is dependant upon and therefor a weak entity of both INSTRUCTOR PILOT and REPLACEMENT PILOT. Because INSTRUCTOR

PILOTs may have an ANNUAL NATOPS EVALUATION in both the T-34 and the F/A-18, the relationship between these two entities is 1:N. The relationship between REPLACEMENT PILOT and ANNUAL NATOPS EVALUATION is 1:1 because REPLACEMENT PILOTs receive an ANNUAL NATOPS EVALUATION only in the F/A-18 aircraft.

The entity CLASS has a 1:N relationship with REPLACEMENT PILOT and a N:M relationship with INSTRUCTOR PILOT. This occurs because each REPLACEMENT PILOT must be assigned to a class. Each CLASS consists of multiple REPLACEMENT PILOTs and is instructed by multiple INSTRUCTOR PILOTS. While some INSTRUCTOR PILOTs may teach multiple CLASSES, other INSTRUCTOR PILOTs may have no affiliation with any CLASS.

## **2. The ASDS Semantic Object Model**

During development of the ASDS SOM, several opportunities were discovered whereby previously identified ASDS E-R entities could be combined with no discernable reduction in overall ASDS utility. The following 11 objects were identified:

- AIRCRAFT RIDER
- FLIGHTCREW
- PASSENGER
- EGRESS
- PHYSICAL
- SWIM
- PHYSIOLOGY

- INSTRUMENT QUAL
- NATOPS EVAL
- MANUALS
- CLASS

AIRCRAFT RIDER is a parent/subtype semantic object with unique identifier SSN.

Additional simple attributes include Name, RankRate, Grade, Service, Designator, BirthDate and BirthMonth. These attributes are routinely found on every NATOPS form. On the ASDS SOM diagrams, simple attribute cardinalities are omitted when the identifying attributes have a cardinality of 1.1 and the other simple attributes have a cardinality of 0.1.

AIRCRAFT RIDER also contains the object attributes EGRESS, PHYSICAL, SWIM, PHYSIOLOGY and MANUALS. The cardinality of EGRESS is 1.N because an AIRCRAFT RIDER may receive EGRESS training in both the T-34 and F/A-18 aircraft. The cardinalities of PHYSICAL, SWIM and PHYSIOLOGY are 1.1 because each is mandatory for every AIRCRAFT RIDER. MANUALS cardinality is 0.N because an AIRCRAFT RIDER may be issued many or no MANUALS.

FLIGHTCREW and PASSENGER are subtype objects of AIRCRAFT RIDER denoted by the subscript 0.ST. This subtype group's subscript 1.1.1 indicates that the subtype is required and exactly one of the subtypes must exist. Therefore, every AIRCRAFT RIDER is either FLIGHTCREW or a PASSENGER. This is a change from the E-R model in that the SOM includes entities FLIGHT SURGEONS and FLIGHT PHYSIOLOGISTS as PASSENGERS and FLIGHTCREW combines the entities INSTRUCTOR PILOT and REPLACEMENT PILOT.

The FLIGHTCREW subtype object inherits supertype object AIRCRAFT RIDER's attributes. Object FLIGHTCREW identifies object AIRCRAFT RIDER as its parent with the subscript P. FLIGHTCREW also contains the object attributes INSTRUMENT QUAL, NATOPS EVAL and CLASS. The cardinality of INSTRUMENT QUAL is 1.1 because each FLIGHTCREW must have one INSTRUMENT QUAL. Because each FLIGHTCREW must have a NATOPS EVAL for each type aircraft flown, the cardinality of NATOPS EVAL is 1.2. The cardinality of class is 0.N because a FLIGHTCREW IP may teach multiple classes or none at all while an RP must belong to exactly one class.

PASSENGER is a subtype object and inherits the attributes of supertype object AIRCRAFT RIDER. Since PASSENGERS may be military or civilian with no required VFA-125 billet, the simple attributes Location, Billet and PhoneNumber allow each PASSENGER to be contacted by Safety Office personnel if necessary.

The EGRESS compound object contains the unique identifier SSN as well as the simple attributes Name, RankRate, TypeSeat, InstructionDate, Grade, Unit and Instructor. EGRESS also includes the object attribute AIRCRAFT RIDER which has a 1.1 cardinality because each EGRESS event is associated with only one AIRCRAFT RIDER.

PHYSICAL is a compound object with the unique identifier SSN. Additional simple attributes include Name, RankRate Service PhysicalDate and PhysicalExpiration. The object attribute AIRCRAFT RIDER is an object identifier of PHYSICAL with a cardinality of 1.1. Each instance of PHYSICAL must correspond directly with each AIRCRAFT RIDER.

The compound objects SWIM and PHYSIOLOGY both contain the unique identifier SSN and simple attributes Name, RankRate, Category, InstructionDate, Grade, Unit and

Instructor. Object attribute AIRCRAFT RIDER has a cardinality of 1.1 because each event of SWIM and PHYSIOLOGY is directly associated with each AIRCRAFT RIDER.

The object INSTRUMENT QUAL has unique identifier SSN and simple attributes Name, Rank, Unit, Rating, DateOfCheck, ExpirationDate, Examiner and Issuer. The 1.1 cardinality of object attribute FLIGHTCREW indicates that each instance of INSTRUMENT QUAL corresponds with a FLIGHTCREW member.

Object NATOPS EVAL contains unique identifier SSN and simple attributes Name, Rank, Squadron, AircraftModel, CrewPosition, FlightHours, Evaluator and DateOfEval as well as object attribute FLIGHTCREW. The cardinality of FLIGHTCREW is 1.1 indicating that each NATOPS EVAL corresponds directly with each FLIGHTCREW.

The compound object CLASS includes unique identifier ClassNumber, simple attributes StartDate, PhaseDate, NumberStudents, DetachmentDate, GraduationDate and object attribute FLIGHTCREW. Each Replacement Pilot (a separate entity in the E-R model but a member of FLIGHTCREW in the SOM) is assigned to only one CLASS resulting in FLIGHTCREW's 1.1 cardinality.

The compound object MANUALS contains group identifier ManualID which includes attributes ManualType and ManualNumber. Despite the fact that VFA-125's Safety Office controls over 1000 NATOPS manuals, each can be identified by the combination of ManualType and ManualNumber. The object attribute AIRCRAFT RIDER has a cardinality of 0.1 indicating that an individual manual may be stored in the Safety Office or issued to only one AIRCRAFT RIDER.

### **C. PHASE III: ASDS EVALUATION PHASE**

At the start of the ASDS project, the Safety Office's only available computer system was a 286 IBM compatible PC. During the latter stages of the project, a 486 IBM compatible PC was procured. It was the ASO's desire to utilize the 286 PC for database management and the 486 PC for all other Safety Department administrative functions. To ensure continuous ASDS availability, it was decided that the ASDS should be operable on both machines. Because dBASE III Plus and dBASE for Windows are compatible, this request was achievable with minimum modifications to the dBASE source code. ASDS-related design and implementation required no funding. The ASPO would be trained to maintain the database system. Additionally, it was decided that the ASDS should have a daily back-up capability to ensure database information integrity.

A complete feasibility reassessment was conducted during this phase. Both the ASO and ASPO studied the entity-relationship and semantic object models. After considerable discussion, the ASO decided that more information was contained in the models than was actually required for use by the squadron's Safety Office. The ASO's minimum NATOPS tracking requirements were the expiration dates of each qualification. Thus, the object EGRESS could be replaced with attribute EgressExpiration, PHYSICAL with PhysicalExpiration, SWIM with SwimExpiration, etc. Since there were exactly ten NATOPS manuals, each with a different name, the object MANUALS could be replaced by ten individual attributes. If practical, it was the ASO's desire to simplify the database into the fewest possible but distinct tables which would continue to allow the minimum data input for all squadron flightcrew and passengers.

## **D. PHASE IV: ASDS DESIGN PHASE**

In response to the ASO's request for database minimization, the ASDS SOM was reassessed. The previously modeled 11 semantic objects were condensed to include only the objects AIRCRAFT RIDER, FLIGHTCREW and PASSENGER. The condensed ASDS relational model is depicted in Appendix C.

### **1. ASDS Design**

Logical database design centers around the parent-subtype relationship between AIRCRAFT RIDER, FLIGHTCREW and PASSENGER. The parent, AIRCRAFT RIDER, includes two mutually exclusive subtypes, FLIGHTCREW and PASSENGER. The key of AIRCRAFT RIDER is SSN, the AIRCRAFT RIDER's Social Security Number. Because of the parent-subtype relationship, both of the subtypes are assigned the parent's key. The bar across the relationship lines is annotated with the subtype group's cardinality of 1.1.1. This value indicates that one subtype is required, that one subtype must have a value within the group and that, at most, only one of the subtypes is allowed, e.g., an AIRCRAFT RIDER must be either a FLIGHTCREW or a PASSENGER but not both. The ASDS data dictionary appears in Appendix D.

### **2. ASDS Normalization**

The cells of each table are single valued with neither repeating groups nor arrays. All entries in any column (attributes) are of the same kind. Each column has a unique name and column order is insignificant. No two rows of a table are identical and row order is also insignificant. As a result, the ASDS tables meet first normal form requirements. [Ref. 7: p. 133]

A relation is in second normal form if all its nonkey attributes are dependent on all of the key [Ref. 7: p. 134]. None of the ASDS relations have composite keys. Because all three ASDS relations have a single attribute (SSN) as their key, the ASDS tables are in second normal form.

Transitive dependencies arise if an arrangement of functional dependencies exist which allow one attribute to determine another through a third attribute. A relation is in third normal form if it is in second normal form and has no transitive dependencies [Ref. 7: p. 135]. Each of the ASDS relations were checked for transitive dependencies. Since none were discovered, the ASDS tables are in third normal form.

A relation is in fourth normal form if it has no multivalued dependencies. A multivalued dependency exists when a relation has at least three attributes, two of them are multivalued and their values depend only on the third attribute. [Ref. 7: p. 137] No multiple values are allowed in the ASDS attribute entries, therefor the ASDS tables are in fourth normal form.

### **3. ASDS Menus and Forms**

The ASDS menus and forms are depicted in Appendix E by Figures 1 through 10. Figure 1 is the main menu which allows the user to easily navigate each of the submenus. Figure 2 is the NATOPS Jacket Management Program menu which allows the user to add, update and delete any flightcrew's NATOPS records. Options also exist for sorting and packing the database. Figure 3 depicts the form which allows the user to enter the flightcrew's name or social security number. Either entry allows the dBASE search function to locate the desired record. Figure 4 is the form which allows entry of each individual's



personal and NATOPS-related data. Figure 5 represents the Backseat Rider Program menu. This menu allows the user to add, update and delete backseat rider records as well as sort and pack the database. Figure 6 depicts the form which allows the user to enter the backseat rider's name or social security number. As before, either entry allows the dBASE search function to locate the desired record. Figure 7 is the form which allows entry of each backseat rider's personal and NATOPS-related data. Figure 8 represents the Safety Office Report Generator menu. This menu allows the user to print the NATOPS Qualification Expiration and Backseat Rider Lists. In addition, the user may print a formatted listing of the entire database. Figure 9 represents the form which allows entry of the dates and report signer's information associated with each NATOPS Qualification Expiration List. Figure 10 depicts the Database Backup Program menu which allows the user to backup all ASDS files.

#### **4. ASDS Reports**

Examples of the two reports automatically generated by the ASDS are located in Appendix F. These reports, titled the AERONAUTICALLY/NON-AERONAUTICALLY DESIGNATED BACKSEAT RIDER LIST and NATOPS QUAL EXPIRATION LIST, are disseminated to all squadron departments as well as the Ready Room.

##### ***a. Backseat Rider List***

This "Backseat Rider" report includes two distinct sections. The initial section identifies aeronautically designated backseat riders and includes Flight Surgeons, Flight Physiologists and other designated aviators/NFOs from other NAS Lemoore commands as well as designated personnel from other military installations. The second section identifies non-aeronautically designated backseat riders and includes all Selected Passengers.

Each section of the Backseat Rider List provides rules governing those flights for which each backseat rider is qualified. Additionally, each backseat rider's name, rank or rate, next expiring NATOPS qualification, qualification expiration date and location is provided. This data greatly enhances the Schedules Officer's ability to preplan the daily flight schedule and allows the Squadron Duty Officer to verify each backseat rider's qualifications immediately prior to flight assignment.

***b. NATOPS Qualification Expiration List***

The NATOPS Qualification Expiration List can be generated for any two-consecutive-month period and contains three separate sections. The first section provides the names of those flightcrew with already-expired NATOPS qualifications. The second section provides information pertaining to those NATOPS qualifications expiring in the first selected month. Section three provides similar data for NATOPS qualifications expiring in the following month.

In each section, the name, rank, NATOPS qualification expiring and expiration date are provided. This list is provided to all squadron departments and is posted in the Ready Room. Each flightcrew member can check the list to verify his NATOPS qualification status. In addition, the Schedules Officer is now able to plan NATOPS training classes or qualification flights up to two months in advance. Neither of these capabilities existed prior to ASDS implementation.

**E. PHASE V: ASDS IMPLEMENTATION**

Ashton-Tate's dBASE III Plus and Borland's dBASE for Windows were selected to build the ASDS. Because dBASE for Windows is backwards compatible with dBASE III

Plus, the ASDS is able to operate on the Safety Office's 286 and 486 PCs. dBASE was well-suited to handle all present Safety Department DBMS requirements as well as having ample ability to implement additional features in the future. Utilizing the information described earlier, the database tables were constructed. The next step in creating the ASDS was to ensure the referential integrity of the data and database, i.e., if data entered in the database key fields were changed, all the corresponding fields in the dependent tables would also change.

The minimum system hardware parameters are: a 286 IBM compatible PC for the operation of dBASE III Plus or a 386 IBM compatible PC for the operation of dBASE for Windows. The ASDS requires only one 1.44 MB 3.5" floppy disk to hold all required ASDS information which includes database files, indexes, program code, screens and reports.

Forms, reports and menus were constructed using the programming capability of dBASE. The programming language allowed for algorithms to be built for each interactive menu as well as the for the formatting of the computer-generated reports related to NATOPS qualifications. Data input and retrieval screens were constructed utilizing dBASE's screen builder. The ASDS dBASE source code appears in Appendix G.

The parallel strategy of database implementation was selected by the ASO. This strategy was viewed as optimum because no one in the Safety Department had previously operated a database system. The NATOPS Officer and ASPO were concerned that a future failure of the ASDS combined with a failure to maintain the long-used manual NATOPS qualification tracking system could decrease rather than increase overall Safety Department efficiency. This implementation strategy is safest because it allows both systems to be utilized

simultaneously. Should any difficulties arise with the ASDS, no deleterious effects would be suffered by the Safety Department. A drawback is the small increase of man-hours spent in the "double entry" of data into the two systems.

Familiarization and training sessions were conducted with the NATOPS Officer, ASPO and Safety Office staff to enable them to become comfortable with the database system's nuances, intricacies and capabilities. Because the ASDS is both interactive and user-friendly, extensive training was not required. Safety Office staff quickly learned to navigate through the ASDS's simple push-button screens and menus. As the ASDS maintainer, the ASPO received additional training in program reinstallation, back-up techniques and troubleshooting options.

ASDS testing consisted of entering all data related to every squadron IP, RP and Selected Passenger into the database. The intent was to ascertain whether the ASDS could provide reports identifying who was out of qualification and what those qualifications were. Immediately prior to generating the ASDS reports, a thorough screening of every NATOPS Jacket was conducted. The ultimate test of the ASDS was to check the computer generated reports against the manual screening results for discrepancies. No errors were found. Minor modifications were made to the system to correct menu, screen and report formatting errors when any were detected.

ASDS maintenance will primarily be provided by the system administrator (the ASPO) who will perform daily back-ups, system reloads and data integrity checks. Revisions to the dBASE source code will be performed by the author. In the future, Safety Department

personnel may wish to add additional capabilities to the ASDS. In this case, a study of the dBASE programming language and algorithm construction would be required.



#### IV. CONCLUSIONS

The ASDS has been on-line for many months and continues to successfully meet the expectations of the users in that the ASDS performs every function initially envisioned by the ASO. The Safety Department staff have come to rely heavily on the computer-generated NATOPS reports. Staff members have also learned, through error recognition, that the input of data to the ASDS is the most important part of overall system integrity. If a data entry error is made, future NATOPS qualification expiration reports will eventually contain erroneous information. As a result, data entry clerks make a concerted effort to be error free. Both Safety and Operations Department personnel have already realized an immense increase in overall efficiency - especially in the ability to plan ahead.

Database design is an iterative process involving the constant reeducation of both the database designer as well as the ultimate user. As in the case of VFA-125's ASO and Safety Office staff, many users have little or no previous database experience and, as a result, are unaware of either the customer needs analysis process or DBMS design methodology. Through an in-depth study of the ASDS entity-relationship model, the SOM and finally the relational model, the ASO was able to narrow the scope of the ASDS project. This evolutionary process resulted in a final ASDS product vastly different from the DBMS initially envisioned by the database designer. Most importantly though, this process successfully resulted in a final product meeting each of the users' specific needs.

It is important to recognize that the Navy has many large aviation squadrons with large numbers of assigned aircrew. These same squadrons may also provide services to

selected passengers. Currently no standardized Navy-wide automated NATOPS qualification database tracking system is available. Those NATOPS qualification DBMSs that do exist are individually constructed and, like the VFA-125 ASDS, specifically tailored to an individual aviation squadron's needs. No system compatibility exists between these stand-alone DBMSs. In those large aviation squadrons that continue to track the numerous NATOPS qualifications manually, the probability significantly increases that aircrew and/or passengers fly without being fully NATOPS qualified. Oftentimes, this fact is only uncovered during mishap investigations. It is imperative, especially during this period of military downsizing, that the man-hour intensive manual NATOPS qualification tracking system be replaced by an automated NATOPS DBMS. The benefits are clear - increased efficiency and greater overall safety.

Three recommendations result from this study:

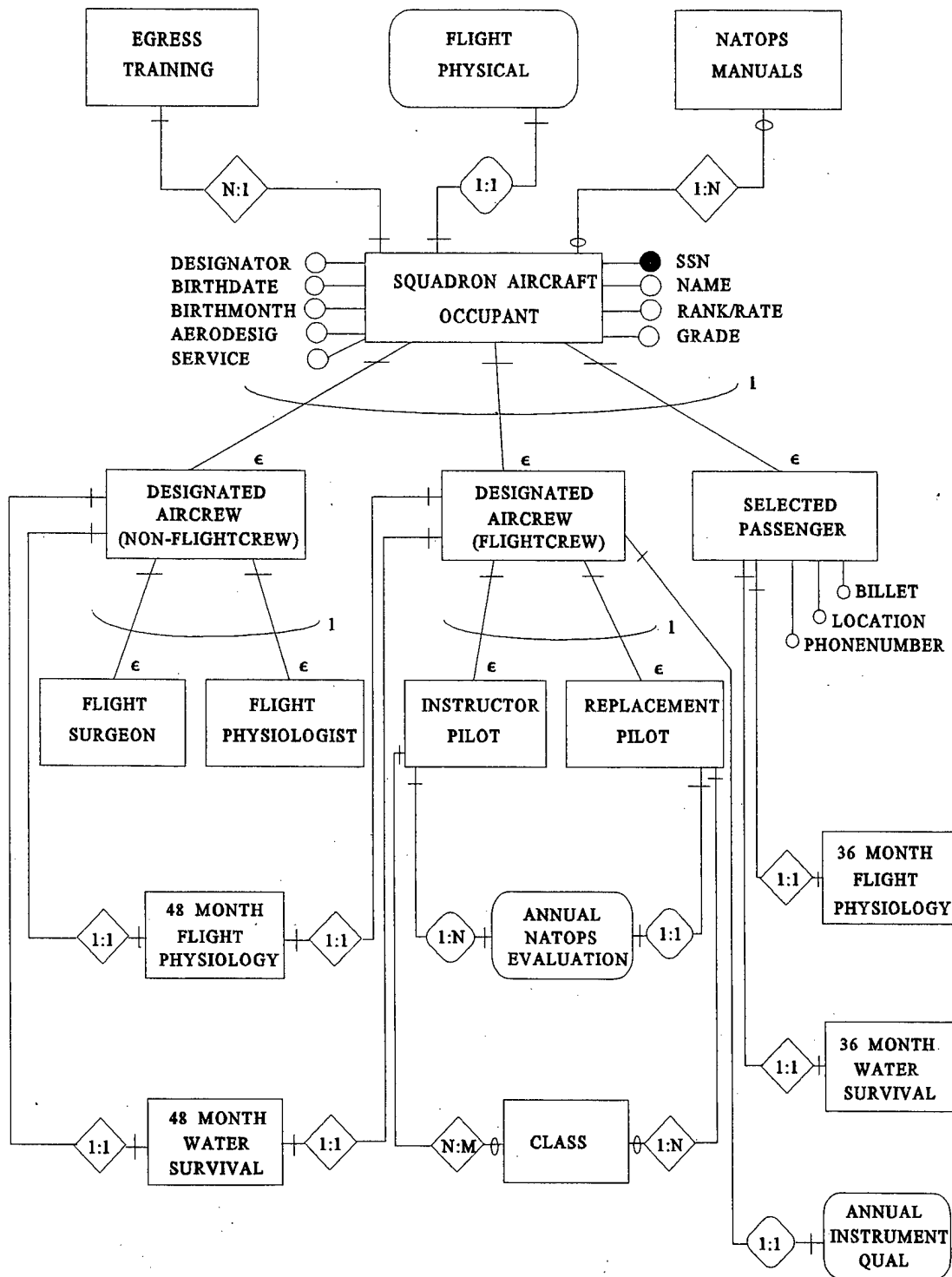
- A single, standard IBM PC Windows-based database application be selected by the Navy and provided to each aviation squadron.
- The Naval Safety Center should design and build a standardized NATOPS qualification tracking database system utilizing the approved database application. This NATOPS DBMS would be provided to each aviation squadron.
- The Naval Safety Center would act as the DBMS's central custodian or "model manager" responsible for soliciting, collecting, effecting and disseminating changes to the DBMS. This would continue to ensure that every squadron had the same NATOPS DBMS with the latest updates. It would also guarantee each squadron a single conduit for recommended DBMS revisions.



By these actions, the Naval Safety Center could greatly reduce the possibility of future pilot-error aviation mishaps while simultaneously standardizing the NATOPS qualification tracking system throughout the Navy.

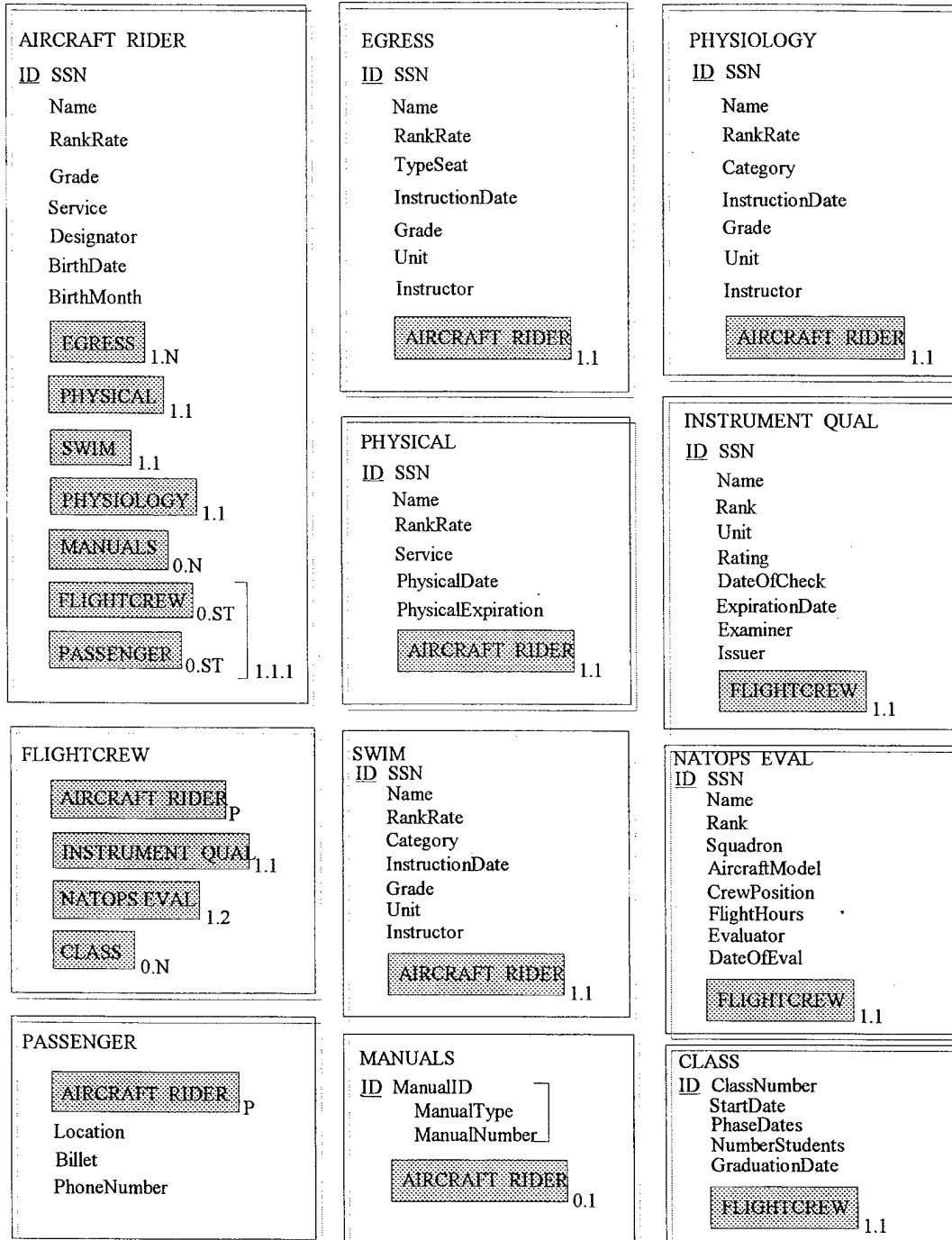


# APPENDIX A: ASDS ENTITY-RELATIONSHIP MODEL





## APPENDIX B. ASDS SEMANTIC OBJECT MODEL





## APPENDIX C. ASDS RELATIONAL MODEL

### AIRCRAFT RIDER

| SSN | Name | Rank | Service | Grade | BirthDate | BirthMonth |  |
|-----|------|------|---------|-------|-----------|------------|--|
|-----|------|------|---------|-------|-----------|------------|--|

### AIRCRAFT RIDER (Continued)

| Swim | Physiology | UpChit | F18Seat | T34Egress |
|------|------------|--------|---------|-----------|
|------|------------|--------|---------|-----------|

1.1.1

### PASSENGER

| SSN | Officer | Enlisted | Rate | AeroDesignated |  |
|-----|---------|----------|------|----------------|--|
|-----|---------|----------|------|----------------|--|

### PASSENGER (Continued)

| Location | Billet | Phone | OutOfQual |
|----------|--------|-------|-----------|
|----------|--------|-------|-----------|

### FLIGHTCREW

| SSN | Designator | IP | RP | Class | InstCheck | F18NATOPS |  |
|-----|------------|----|----|-------|-----------|-----------|--|
|-----|------------|----|----|-------|-----------|-----------|--|

### FLIGHTCREW (Continued)

| T34NATOPS | FA18PCL | FA18NATMan | FA18Perf | FA18TacPCL |  |
|-----------|---------|------------|----------|------------|--|
|-----------|---------|------------|----------|------------|--|

### FLIGHTCREW (Continued)

| FA18EPEPCL | T34PCL | T34NATMan | CVNATOPS | IFRMan | OPNAV3710 |
|------------|--------|-----------|----------|--------|-----------|
|------------|--------|-----------|----------|--------|-----------|





## **APPENDIX D. ASDS DATA DICTIONARY**

### **A. SEMANTIC OBJECT DEFINITIONS**

#### **1. AIRCRAFT RIDER Object (Supertype)**

- \*SSN; Aircraft-rider social-security-number
- NAME; Aircraft-rider-name
- RANK; Aircraft-rider-rank
- SERVICE; Aircraft-rider-service
- GRADE; Aircraft-rider-grade
- BIRTHDATE; Aircraft-rider-date-of-birth
- BIRTHMONTH; Aircraft-rider-birth-month
- UPCHIT; Aircraft-rider-medical-up-chit-expiration-date
- F18SEAT; Aircraft-rider-F/A-18-seat-expiration-date
- T34EGRESS; Aircraft-rider-T-34-egress-expiration-date
- SWIM; Aircraft-rider-swim-expiration-date
- PHYSIOLOGY; Aircraft-rider-physiology-expiration-date

#### **2. FLIGHTCREW Object (Subtype Object of AIRCRAFT RIDER)**

- \*SSN; Aircraft-rider-social-security-number (Supertype's key)
- DESIGNATOR; Flightcrew-designator
- IP; Flightcrew-instructor-pilot-status

- RP; Flightcrew-replacement-pilot-status
- CLASS; Flightcrew-class-assignment
- INSTCHECK; Flightcrew-instrument-check-expiration-date
- F18NATOPS; Flightcrew-F/A-18-NATOPS-check-expiration-date
- T34QUAL; Flightcrew-T-34-qualification-status
- T34NATOPS; Flightcrew-T-34-NATOPS-check-expiration-date
- FA18PCL; Flightcrew-F/A-18-pocket-checklist-number
- FA18NATMAN; Flightcrew-F/A-18-NATOPS-manual-number
- FA18PERF; Flightcrew-F/A-18-performance-charts-number
- FA18TACPCL; Flightcrew-F/A-18-tactical-pocket-checklist-number
- FA18EPEPCL; Flightcrew-F/A-18-EPE-pocket-checklist-number
- T34PCL; Flightcrew-T-34-pocket-checklist-number
- T34NATMAN; Flightcrew-T-34-NATOPS-manual-number
- IFRMAN; Flightcrew-in-flight-refueling-manual-number
- OPNAV3710; Flightcrew-OPNAV-3710-number
- CVNATOPS; Flightcrew-CV-NATOPS-manual-number

### **3. PASSENGER Object (Subtype of AIRCRAFT RIDER)**

- \*SSN; Aircraft-rider-social-security-number (Supertype's key)
- OFFICER; Passenger-officer-status
- ENLISTED; Passenger-enlisted-status

- RATE; Passenger-enlisted-rate
- AERODESIG; Passenger-aerodesignation-status
- LOCATION; Passenger-work-location
- BILLET; Passenger-billet
- PHONE; Passenger-phone-number
- OUTOFQUAL; Passenger-NATOPS-qualification-status

## **B. DOMAIN DEFINITIONS**

- Social-security-number
  - Numeric 9
  - Social security number of aircraft rider
- Aircraft-rider-name
  - Character 20
  - Last name, first initial and middle initial of aircraft rider
- Aircraft-rider-rank
  - Character 5
  - Rank of officer aircraft rider, standard military abbreviation
- Aircraft-rider-service
  - Character 5
  - Military service branch of aircraft rider

- Aircraft-rider-grade
  - Numeric 1
  - Military grade of aircraft rider
- Aircraft-rider-birthdate
  - Date 8, Mask MM/DD/YYYY
  - Date of aircraft rider's birth
- Aircraft-rider-birthmonth
  - Character 3
  - Month of aircraft rider's birth
- Aircraft-rider-upchit
  - Date 8, Mask MM/DD/YYYY
  - Expiration of aircraft rider's medical upchit
- Aircraft-rider-F/A-18-seat
  - Date 8, Mask MM/DD/YYYY
  - Expiration of aircraft rider's F/A-18 seat qualification
- Aircraft-rider-T-34-egress
  - Date 8, Mask MM/DD/YYYY
  - Expiration date of aircraft rider's T-34 aircraft egress qualification
- Aircraft-rider-swim
  - Date 8, Mask MM/DD/YYYY
  - Expiration date of aircraft rider's swim training qualification

- Aircraft-rider-physiology
  - Date 8, Mask MM/DD/YYYY
  - Expiration date of aircraft rider's flight physiology training qualification
- Flightcrew-designator
  - Numeric 4
  - Flightcrew designator
- Flightcrew-instructor-pilot
  - Logical 1
  - Flightcrew instructor pilot status
- Flightcrew-replacement-pilot
  - Logical 1
  - Flightcrew replacement pilot status
- Flightcrew-class
  - Numeric 4
  - Flightcrew replacement pilot class assignment number
- Flightcrew-instrument-check
  - Date 8, Mask MM/DD/YYYY
  - Flightcrew instrument check expiration date
- Flightcrew-F/A-18-NATOPS-check
  - Date 8, Mask MM/DD/YYYY
  - Flightcrew NATOPS check expiration date

- Flightcrew-T-34-qualification-status
  - Logical 1
  - Flightcrew status regarding T-34 qualification
- Flightcrew-T-34-NATOPS-check
  - Date 8, Mask MM/DD/YYYY
  - Flightcrew T-34 NATOPS qualification expiration date
- Flightcrew-F/A-18-pocket-checklist
  - Numeric 3
  - Flightcrew F/A-18 NATOPS pocket checklist number
- Flightcrew-F/A-18-NATOPS-manual
  - Numeric 3
  - Flightcrew F/A-18 NATOPS manual number
- Flightcrew-F/A-18-performance-manual
  - Numeric 3
  - Flightcrew F/A-18 NATOPS performance manual number
- Flightcrew-F/A-18-tactical-pocket-checklist
  - Numeric 3
  - Flightcrew F/A-18 NATOPS tactical pocket checklist number
- Flightcrew-F/A-18-enhanced-performance-engine-pocket-checklist
  - Numeric 3
  - Flightcrew F/A-18 NATOPS enhanced performance engine PCL number

- Flightcrew-T-34-pocket-checklist
  - Numeric 3
  - Flightcrew T-34 NATOPS pocket checklist number
- Flightcrew-T-34-NATOPS-manual
  - Numeric 3
  - Flightcrew T-34 NATOPS pocket checklist number
- Flightcrew-in-flight-refueling-manual
  - Numeric 3
  - Flightcrew NATOPS in-flight refueling manual number
- Flightcrew-OPNAV-3710-manual
  - Numeric 3
  - Flightcrew OPNAV 3710.7 series NATOPS manual number
- Flightcrew-CV-NATOPS-manual
  - Numeric 3
  - Flightcrew CV NATOPS manual number
- Passenger-officer-status
  - Logical 1
  - Passenger officer status
- Passenger-enlisted-status
  - Logical 1
  - Passenger enlisted status

- Passenger-rate
  - Character 5
  - Passenger enlisted military rate
- Passenger-aerodesignation-status
  - Logical 1
  - Passenger aerodesignation status
- Passenger-location
  - Character 15
  - Passenger contact location
- Passenger-billet
  - Character 10
  - Passenger military or civilian position
- Passenger-phone
  - Character 15
  - Passenger contact phone number
- Passenger-qualification-status
  - Logical 1
  - Passenger NATOPS qualification status



## APPENDIX E. ASDS MENUS AND FORMS


| VFA-125 NATOPS PROGRAM MANAGER   |
|--|
| <ol style="list-style-type: none"><li>1. NATOPS JACKET MANAGEMENT PROGRAM</li><li>2. BACK SEAT RIDER PROGRAM</li><li>3. PRINT REPORTS</li><li>4. BACK UP DATABASE FILES</li><li>5. EXIT MENU TO ASSIST SCREEN</li><li>6. EXIT MENU TO DOS PROMPT</li></ol> <p>PLEASE MAKE YOUR SELECTION :  :</p> |

Figure 1. ASDS Main Menu


| NATOPS JACKET MANAGEMENT PROGRAM  |
|---|
| <ol style="list-style-type: none"><li>1. ADD NEW NATOPS JACKETS</li><li>2. UPDATE EXISTING NATOPS JACKETS</li><li>3. DELETE OLD NATOPS JACKETS</li><li>4. SORT NATOPS DATABASE</li><li>5. PACK NATOPS DATABASE</li><li>6. RETURN TO MAIN MENU</li></ol> <p>PLEASE MAKE YOUR SELECTION :  :</p> |

Figure 2. ASDS NATOPS Jacket Management Program Menu

ENTER NAME OR SOCIAL SECURITY NUMBER OF AVIATOR TO BE UPDATED

ENTER LAST NAME, FI. MI. OF AVIATOR  
: :  
- OR -

ENTER SOCIAL SECURITY NUMBER OF AVIATOR TO BE UPDATED  
: :  
:

Figure 3. NATOPS Jacket Search Form

VFA-125 ROUGH RAIDER NATOPS DATA FORM

LAST NAME, FI. MI. : : : RANK : : : GRADE : : : SSN : : :  
DESIGNATOR : : : IP(Y/N) : : : RP(Y/N) : : : CLASS : : :  
BIRTHDAY : : : BIRTHMONTH : : : T-34 QUALIFIED : : :  
WATER SURVIVAL EXPIRATION DATE : : :  
PHYSIOLOGY/CHAMBER EXPIRATION DATE : : :  
INSTRUMENT CHECK EXPIRATION DATE : : :  
ANNUAL FLIGHT PHYSICAL EXPIRATION DATE : : :  
F/A-18 NATOPS QUAL EXPIRATION DATE : : :  
F/A-18 SEAT QUAL EXPIRATION DATE : : :  
T-34 NATOPS QUAL EXPIRATION DATE : : :  
T-34 EGRESS QUAL EXPIRATION DATE : : :  
F/A-18 NATOPS MAN : : : F/A-18 TAC PCL : : : OPNAV 3710 : : :  
F/A-18 PERFORMANCE MAN : : : T-34 NATOPS : : : CV NATOPS : : :  
F/A-18 POCKET CHECKLIST : : : T-34 PCL : : : REFUELING MAN : : :

Figure 4. NATOPS Jacket Data Entry Form

| VFA-125 BACKSEAT RIDER PROGRAM  |
|---|
| <ol style="list-style-type: none"><li>1. ADD NEW BACKSEAT RIDER</li><li>2. UPDATE EXISTING BACKSEAT RIDER</li><li>3. DELTE EXPIRED BACKSEAT RIDER</li><li>4. SORT BACKSEAT RIDER DATABASE</li><li>5. PACK BACKSEAT RIDER DATABASE</li><li>6. RETURN TO MAIN MENU</li></ol> <p>PLEASE MAKE YOUR SELECTION : <input type="text"/> :</p> |

Figure 5. Backseat Rider Program Menu

|   |
|---|
| <p>ENTER NAME OR SSN OF BACKSEAT RIDER TO BE UPDATED</p> <p>ENTER LAST NAME, FI. MI. OF BACKSEAT RIDER</p> <p>: <input type="text"/> :</p> <p>- OR -</p> <p>ENTER SSN OF BACKSEAT RIDER TO BE UPDATED</p> <p>: <input type="text"/> :</p> |
|---|

Figure 6. Backseat Rider Search Form

|   |        |                                     |
|---|--------|-------------------------------------|
| LAST NAME, FI. MI. :  |        | SSN :                               |
| OFFICER :   | RANK : | GRADE : ENLISTED : RATE : SERVICE : |
| BIRTHDATE :   |        | BIRTH MONTH : AERODESIGNATED :      |
| LOCATION :  |        |                                     |
| BILLET :  |        |                                     |
| PHONE :   |        |                                     |
| WATER SURVIVAL EXPIRATION DATE :                            |        |                                     |
| PRESSURE CHAMBER EXPIRATION DATE :                          |        |                                     |
| * NOTE: NONAERO SWIM/PHYS TRAINING VALID FOR ONLY 3 YEARS * |        |                                     |
| ANNUAL PHYSICAL EXPIRATION DATE :                           |        |                                     |
| F/A-18 EJECTION SEAT EXPIRATION DATE :                      |        |                                     |
| T-34 EGRESS/BAILOUT EXPIRATION DATE :                       |        |                                     |
| IS THIS PERSON OUT OF QUAL? :                               |        |                                     |

Figure 7. Backseat Rider Data Entry Form

| SAFETY OFFICE REPORT GENERATOR   |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. PRINT NATOPS QUAL LIST</li> <li>2. PRINT NATOPS DATABASE</li> <li>3. PRINT BACK SEAT LIST</li> <li>4. RETURN TO MAIN MENU</li> </ol> <p>PLEASE MAKE YOUR SELECTION :</p> |  |

Figure 8. Safety Office Report Generator Menu

ENTER ENDING DATE OF PREVIOUS MONTH :  :  
 ENTER ENDING DATE OF PRESENT MONTH :  :  
 ENTER ENDING DATE OF NEXT MONTH :  :  
 ENTER NAME OF REPORT SIGNER :  :  
 ENTER RANK OF REPORT SIGNER :  :  
 ENTER SERVICE OF REPORT SIGNER :  :  
  
 ENSURE THE PRINTER IS ON AND PAPER LOADED  
  
 CONTINUE WITH PRINT JOB (Y/N) :  :

Figure 9. NATOPS Report Entry Form

| DATABASE BACKUP PROGRAM                                       |                      |
|---|----------------------|
| PLACE THE SAFETY/NATOPS DATABASE DISK IN DRIVE A:             |                      |
| CONTINUE WITH DATABASE BACKUP? (Y/N) : <input type="text"/> : |                      |
| COPYING NATOPS.DBF  | COPYING BACKSEAT.DBF |
| COPYING NAMEINDX.NDX  | COPYING NAMEBACK.NDX |
| COPYING SSNINDEX.NDX  | COPYING SSNBACK.NDX  |
|   | COPYING UTILITY.DBF  |
| BACKUP COMPLETE. PRESS ANY KEY TO CONTINUE                    |                      |

Figure 10. NATOPS Database Backup Program Menu



## APPENDIX F. ASDS NATOPS REPORTS

15 APR 96

### MEMORANDUM

From: Aviation Safety Officer, Strike Fighter squadron ONE TWO FIVE  
To: Operations Officer, Strike Fighter Squadron ONE TWO FIVE  
Info: CDO/ODO/SDO/Schedules Officer

Subj: AERONAUTICALLY/NON-AERONAUTICALLY DESIGNATED BACKSEAT  
RIDER LIST

Ref: (a) VFA-125INST 3710.4D  
(b) OPNAVINST 3710.7Q

1. As outlined in reference (a), the listed **aeronautically designated** personnel may occupy the aft seat of VFA-125 aircraft with the following restrictions:

- A. Only qualified IPs will be selected to conduct backseat rider proficiency and incentive flights.
- B. No backseat riders in PMCF or in-flight refueling flights.
- C. Aeronautically designated personnel may fly in the aft cockpit of the following flights:
  - (1) All Transition Phase flights (FORM, NAV, AWI) and VIDs.
  - (2) BFM and LAT flights with the IP's approval.
  - (3) FWT and STRIKE sorties with Phase Head authorization.
  - (4) CV flights with CO's or OPS Officer approval.
  - (5) GUN Stage flights.

2. The following personnel are **AERONAUTICALLY DESIGNATED** Backseat Riders in accordance with reference (b):

| NAME               | RANK/<br>RATE | QUAL<br>EXPIRING | QUAL<br>EXP DATE | RIDER<br>LOCATION |
|--------------------|---------------|------------------|------------------|-------------------|
| BRANSDORFER, A. H. | LT            | UPCHIT           | 01/31/97         | APTU              |
| MILLIGAN, L. A.    | LT            | UPCHIT           | 10/31/96         | APTU              |
| THORNTON, J. F.    | LT            | UPCHIT           | 02/28/97         | VMFA-212          |
| ANTICLIFFE, S. J.  | 1STLT         | F18SEAT          | 11/30/96         | MATSG             |
| DAHL, W. A.        | LTJG          | UPCHIT           | 09/30/96         | CSFWP             |
| GILBERT, M.        | AO2           | UPCHIT           | 02/28/97         | OMD               |
| STREIB, R. F.      | AMSC          | F18SEAT          | 08/31/96         | NASL OPS          |

3. As outlined in reference (a), the listed **non-aeronautically designated** personnel may occupy the aft seat of VFA-125 aircraft with the following restrictions:

- A. Only qualified IPs will be selected to conduct backseat rider proficiency and incentive flights.
- B. No backseat riders in PMCF or in-flight refueling flights.
- C. Flights are limited to Transition Phase (FORM, NAV, AWI) and VID.
- D. Non-aeronautically designated personnel **may not** fly in the aft cockpit of the following flights:
  - (1) Night flights.
  - (2) Flights when the field is IFR.
  - (3) Flights to or from the CV.
  - (4) Flights that do not begin and end at the same field.

4. The following personnel are **NON-AERONAUTICALLY DESIGNATED** Backseat riders in accordance with reference (b).

| NAME             | RANK/<br>RATE | QUAL<br>EXPIRING | QUAL<br>EXP DATE | RIDER<br>LOCATION |
|------------------|---------------|------------------|------------------|-------------------|
| BOSWELL, B.      | LCDR          | UPCHIT           | 01/19/97         | ALAMEDA           |
| KELLY, J. G.     | LT            | F18SEAT          | 02/28/97         | APTU              |
| FERREL, M. D.    | LTJG          | F18SEAT          | 12/31/96         | VFA-125           |
| LUCAS, E. C.     | LTJG          | UPCHIT           | 01/30/97         | VFA-113           |
| BALCH, T. A.     | ENS           | F18SEAT          | 02/28/97         | SFWSP             |
| GATES, J. H.     | ENS           | SWIM             | 06/30/96         | SFWSP             |
| ALBERT, D. M.    | AT3           | F18SEAT          | 11/30/96         | VFA-303           |
| ANDERSON, V.     | SGT           | UPCHIT           | 03/11/97         | NAMTRA            |
| ASAKEVICH, D. J. | LCPL          | UPCHIT           | 01/13/97         | W/C13B            |
| DARCY, J. T.     | AC3           | F18SEAT          | 11/30/96         | NASL OPS          |
| DAVIS, G. P.     | AKAN          | F18SEAT          | 11/30/96         | VAQ-34            |
| HECHEL, R.       | AE3           | UPCHIT           | 03/18/97         | AE SHOP           |
| JACKSON, W.      | LCPL          | F18SEAT          | 11/30/96         | MATSG             |

T. R. MARTIN  
LCDR USN



15 APR 96

**MEMORANDUM**

From: Aviation Safety Officer, Strike Fighter squadron ONE TWO FIVE  
To: All Squadron Flightcrew  
Via: Operations Officer, Strike Fighter Squadron ONE TWO FIVE

Subj: NATOPS QUAL EXPIRATION DATES FOR APRIL/MAY

Ref: (a) OPNAVINST 3710.7Q

1. As per reference (a), the following qualifications have expired:

| Name             | Rank  | Qual       | Date     |
|------------------|-------|------------|----------|
| GRAFFIS, K. H.   | LCDR  | UPCHIT     | 03/31/96 |
| WEINMANN, D. S.  | 1STLT | UPCHIT     | 02/29/96 |
| JOHNSON, M. A.   | LTJG  | INSTCHECK  | 03/31/96 |
| SOBYRA, M. R.    | MAJ   | F18NATOPS  | 03/31/96 |
| GALLAGHER, S. R. | LT    | PHYSIOLOGY | 02/29/96 |
| GALLAGHER, S. R. | LT    | SWIM       | 02/29/96 |
| SHAW, G. P.      | MAJ   | F18SEAT    | 03/31/96 |
| GRAHAM, M. E.    | LT    | F18SEAT    | 03/31/96 |
| COWART, J. W.    | LT    | T34NATOPS  | 03/31/96 |
| COWART, J. W.    | LT    | T34EGRESS  | 03/31/96 |

2. As per reference (a), the following qualifications expire during the month of April:

| Name           | Rank  | Qual   | Date     |
|----------------|-------|--------|----------|
| ARNOTT, R. E.  | CAPT  | UPCHIT | 04/30/96 |
| BALL, G. E.    | LT    | UPCHIT | 04/30/96 |
| CONSOLE, K. M. | 1STLT | UPCHIT | 04/30/96 |

|                 |       |            |          |
|-----------------|-------|------------|----------|
| HIMEL, C. A.    | CDR   | INSTCHECK  | 04/30/96 |
| MCKENZIE, G. S. | FLTLT | INSTCHECK  | 04/30/96 |
| ELIOT, G. M.    | LT    | F18NATOPS  | 04/30/96 |
| MAKRIDIS B. K.  | LT    | F18NATOPS  | 04/30/96 |
| KENNEDY, R. J.  | LTCOL | PHYSIOLOGY | 04/30/96 |
| GORTHY, A. R.   | CAPT  | SWIM       | 04/30/96 |
| WRIGHT, C. R.   | LCDR  | F18SEAT    | 04/30/96 |
| WINDER, R. P.   | CAPT  | F18SEAT    | 04/30/96 |
| BALL, G. E.     | LT    | T34NATOPS  | 04/30/96 |
| BALL, G. E.     | LT    | T34NATOPS  | 04/30/96 |

3. As per reference (a), the following qualifications expire during the month of May:

| Name             | Rank  | Qual      | Date     |
|------------------|-------|-----------|----------|
| BREWER, T. G.    | MAJ   | UPCHIT    | 05/31/96 |
| STEFANSIC, S. P. | LTJG  | UPCHIT    | 05/31/96 |
| DWYER, D. W.     | LT    | INSTCHECK | 05/31/96 |
| BERGMAN, D. M.   | 1STLT | INSTCHECK | 05/31/96 |
| CUESTA, J. M.    | CAPT  | F18NATOPS | 05/31/96 |
| DIXON, J. R.     | LT    | F18SEAT   | 05/31/96 |
| NELMS, R. M.     | LTJG  | F18SEAT   | 05/31/96 |
| MONSON, A. P.    | LT    | T34NATOPS | 05/31/96 |
| MONSON, A. P.    | LT    | T34EGRESS | 05/31/96 |

T. R. MARTIN  
LCDR USN

## APPENDIX G. ASDS DBASE SOURCE CODE

```
* SAFETY.PRG
CLEAR ALL
DO WHILE .T.
  CLEAR
  @ 2,0 TO 20,79 DOUBLE
  @ 3,22 SAY "VFA-125 NATOPS PROGRAM MANAGER"
  @ 4,1 TO 4,78 DOUBLE
  @ 7,22 SAY "1. NATOPS JACKET MANAGEMENT PROGRAM"
  @ 8,22 SAY "2. BACK SEAT RIDER PROGRAM"
  @ 9,22 SAY "3. PRINT REPORTS"
  @ 10,22 SAY "4. BACK UP DATABASE FILES"
  @ 11,22 SAY "5. EXIT MENU TO ASSIST SCREEN"
  @ 12,22 SAY "6. EXIT MENU TO DOS PROMPT"
  @ 14,25 SAY "PLEASE MAKE YOUR SELECTION"
  STORE 0 TO SELECTION
  @ 14,52 GET SELECTION PICTURE "9" RANGE 1,6
  READ
  DO CASE
    CASE SELECTION=1
      DO JACKETS
    CASE SELECTION=2
      DO BACKSEAT
    CASE SELECTION=3
      DO REPORTS
    CASE SELECTION=4
      STORE "Y" TO backup
      DO BACKUPS
    CASE SELECTION=5
      STORE " " TO backup
      DO BACKUPS
      CLOSE PROCEDURE
      CLEAR ALL
      ASSIST
      EXIT
    CASE SELECTION=6
      STORE " " TO backup
      DO BACKUPS
      QUIT
  ENDCASE SELECTION
ENDDO
*
*
PROCEDURE JACKETS
DO WHILE .T.
  CLEAR
  @ 2,0 TO 20,79 DOUBLE
  @ 3,23 SAY "NATOPS JACKET MANAGEMENT PROGRAM"
```

```

@ 4,1 TO 4,78 DOUBLE
@ 8,23 SAY "1. ADD NEW NATOPS JACKETS"
@ 9,23 SAY "2. UPDATE EXISTING NATOPS JACKETS"
@ 10,23 SAY "3. DELETE OLD NATOPS JACKETS"
@ 11,23 SAY "4. SORT NATOPS DATABASE"
@ 12,23 SAY "5. PACK NATOPS DATABASE"
@ 13,23 SAY "6. RETURN TO MAIN MENU"
@ 15,26 SAY "PLEASE MAKE YOUR SELECTION"
STORE 0 TO SELECTION
@ 15,53 GET SELECTION PICTURE "9" RANGE 1,6
READ
DO CASE
    CASE SELECTION=1
        DO ADDPILOT
    CASE SELECTION=2
        DO UPDATES
    CASE SELECTION=3
        DO DELETES
    CASE SELECTION=4
        STORE "sortit" TO CHOICE
        DO SORTPACK
    CASE SELECTION=5
        STORE "packit" TO CHOICE
        DO SORTPACK
    CASE SELECTION=6
        CLEAR
        RETURN
ENDCASE SELECTION
ENDDO
*
*
PROCEDURE ADDPILOT
USE C:\DATABASE\NATOPS\NATOPS
CLEAR
STORE 999999999 TO ssntemp
STORE SPACE(20) TO nametemp
@ 2,0 TO 20,79 DOUBLE
@ 6,15 SAY "ENTER NAME OR SOCIAL SECURITY NUMBER OF NEW AVIATOR"
@ 8,23 SAY "ENTER LAST NAME, FI. MI. OF AVIATOR"
@ 9,29 GET nametemp PICTURE "!!!!!!!!!!!!!!!!!!!!!!"
@ 11,36 SAY "- OR -"
@ 13,18 SAY "ENTER SOCIAL SECURITY NUMBER OF NEW AVIATOR"
@ 14,33 GET ssntemp PICTURE "@R ###-##-####"
READ
IF nametemp<>SPACE(20)
    SET INDEX TO C:\DATABASE\NATOPS\NAMEINDEX,C:\DATABASE\NATOPS\SSNINDEX
    GO TOP
    SEEK TRIM(nametemp)
    IF NAME=TRIM(nametemp)
        SET COLOR TO R+/B,R/W,BR

```

```

@ 16,20 SAY "THIS AVIATOR IS ALREADY IN THE DATABASE"
@ 17,11 SAY "PRESS ANY KEY TO RETURN TO THE NATOPS JACKET TRACKING MENU"
SET COLOR TO W+/B,R/W,BR
WAIT ""
CLOSE DATABASES
CLEAR
RETURN
ENDIF
ENDIF
IF ssntemp<>999999999
SET INDEX TO C:\DATABASE\NATOPS\SSNINDEX,C:\DATABASE\NATOPS\NAMEINDEX
GO TOP
SEEK ssntemp
IF ssntemp=SSN
SET COLOR TO R+/B,R/W,BR
@ 16,20 SAY "THIS AVIATOR IS ALREADY IN THE DATABASE"
@ 17,11 SAY "PRESS ANY KEY TO RETURN TO THE NATOPS JACKET TRACKING MENU"
SET COLOR TO W+/B,R/W,BR
WAIT ""
CLOSE DATABASES
CLEAR
RETURN
ENDIF
ENDIF
IF (ssntemp=999999999 .AND. nametemp=SPACE(20))
SET COLOR TO R+/B,R/W,BR
@ 16,31 SAY "NO ENTRY WAS MADE"
@ 17,11 SAY "PRESS ANY KEY TO RETURN TO THE NATOPS JACKET TRACKING MENU"
SET COLOR TO W+/B,R/W,BR
WAIT ""
CLOSE DATABASES
CLEAR
RETURN
ENDIF
SET FORMAT TO C:\DATABASE\NATOPS\NATOPS
SET MESSAGE TO "WHEN NEW RECORD ENTRIES ARE COMPLETE PRESS CTRL-END"
APPEND
SET MESSAGE TO " "
CLOSE DATABASES
CLEAR
RETURN
*
*
PROCEDURE UPDATES
USE C:\DATABASE\NATOPS\NATOPS
CLEAR
STORE 999999999 TO ssntemp
STORE SPACE(20) TO nametemp
@ 2,0 TO 20,79 DOUBLE
@ 6,10 SAY "ENTER NAME OR SOCIAL SECURITY NUMBER OF AVIATOR TO BE UPDATED"

```

```

@ 8,23 SAY "ENTER LAST NAME, FI. MI. OF AVIATOR"
@ 9,29 GET nametemp PICTURE "!!!!!!!!!!!!!!!!!!!!!!"
@ 11,36 SAY "- OR -"
@ 13,14 SAY "ENTER SOCIAL SECURITY NUMBER OF AVIATOR TO BE UPDATED"
@ 14,33 GET ssntemp PICTURE "@R ###-##-####"
READ
IF nametemp<>SPACE(20)
    SET INDEX TO C:\DBASE\NATOPS\NAMEINDEX,C:\DBASE\NATOPS\SSNINDEX
    GO TOP
    SEEK TRIM(nametemp)
    IF EOF()
        SET COLOR TO R+/B,R/W,BR
        @ 16,18 SAY "THIS AVIATOR DOES NOT EXIST IN THE DATABASE"
        @ 17,11 SAY "PRESS ANY KEY TO RETURN TO THE NATOPS JACKET TRACKING MENU"
        SET COLOR TO W+/B,R/W,BR
        WAIT ""
        CLOSE DATABASES
        CLEAR
        RETURN
    ENDIF
ENDIF
IF ssntemp<>999999999
    SET INDEX TO C:\DBASE\NATOPS\SSNINDEX,C:\DBASE\NATOPS\NAMEINDEX
    GO TOP
    SEEK ssntemp
    IF EOF()
        SET COLOR TO R+/B,R/W,BR
        @ 16,18 SAY "THIS AVIATOR DOES NOT EXIST IN THE DATABASE"
        @ 17,11 SAY "PRESS ANY KEY TO RETURN TO THE NATOPS JACKET TRACKING MENU"
        SET COLOR TO W+/B,R/W,BR
        WAIT ""
        CLOSE DATABASES
        CLEAR
        RETURN
    ENDIF
ENDIF
IF (ssntemp=999999999 .AND. nametemp=SPACE(20))
    SET COLOR TO R+/B,R/W,BR
    @ 16,31 SAY "NO ENTRY WAS MADE"
    @ 17,11 SAY "PRESS ANY KEY TO RETURN TO THE NATOPS JACKET TRACKING MENU"
    SET COLOR TO W+/B,R/W,BR
    WAIT ""
    CLOSE DATABASES
    CLEAR
    RETURN
ENDIF
SET FORMAT TO C:\DBASE\NATOPS\NATOPS
SET MESSAGE TO "WHEN UPDATED RECORD ENTRIES ARE COMPLETE PRESS CTRL-END"
EDIT RECNO()
SET MESSAGE TO " "

```

CLOSE DATABASES

CLEAR

RETURN

\*

\*

PROCEDURE DELETES

USE C:\DBASE\NATOPS\NATOPS

CLEAR

STORE 999999999 TO ssntemp

STORE SPACE(20) TO nametemp

@ 2,0 TO 20,79 DOUBLE

@ 6,10 SAY "ENTER NAME OR SOCIAL SECURITY NUMBER OF AVIATOR TO BE DELETED"

@ 8,23 SAY "ENTER LAST NAME, FI. MI. OF AVIATOR"

@ 9,29 GET nametemp PICTURE "!!!!!!!!!!!!!!!!!!!!!!"

@ 11,36 SAY "- OR -"

@ 13,14 SAY "ENTER SOCIAL SECURITY NUMBER OF AVIATOR TO BE DELETED"

@ 14,33 GET ssntemp PICTURE "@R ###-##-####"

READ

IF nametemp<>SPACE(20)

SET INDEX TO C:\DBASE\NATOPS\NAMEINDEX,C:\DBASE\NATOPS\SSNINDEX

GO TOP

SEEK TRIM(nametemp)

IF EOF()

SET COLOR TO R+/B,R/W,BR

@ 16,18 SAY "THIS AVIATOR DOES NOT EXIST IN THE DATABASE"

@ 17,11 SAY "PRESS ANY KEY TO RETURN TO THE NATOPS JACKET TRACKING MENU"

SET COLOR TO W+/B,R/W,BR

WAIT ""

CLOSE DATABASES

CLEAR

RETURN

ENDIF

ENDIF

IF ssntemp<>999999999

SET INDEX TO C:\DBASE\NATOPS\SSNINDEX,C:\DBASE\NATOPS\NAMEINDEX

GO TOP

SEEK ssntemp

IF EOF()

SET COLOR TO R+/B,R/W,BR

@ 16,18 SAY "THIS AVIATOR DOES NOT EXIST IN THE DATABASE"

@ 17,11 SAY "PRESS ANY KEY TO RETURN TO THE NATOPS JACKET TRACKING MENU"

SET COLOR TO W+/B,R/W,BR

WAIT ""

CLOSE DATABASES

CLEAR

RETURN

ENDIF

ENDIF

IF (ssntemp=999999999 .AND. nametemp=SPACE(20))

SET COLOR TO R+/B,R/W,BR

```

@ 16,31 SAY "NO ENTRY WAS MADE"
@ 17,11 SAY "PRESS ANY KEY TO RETURN TO THE NATOPS JACKET TRACKING MENU"
SET COLOR TO W+/B,R/W,BR
WAIT ""
CLOSE DATABASES
CLEAR
RETURN
ENDIF
SET FORMAT TO C:\DATABASE\NATOPS\NATOPS
SET MESSAGE TO "TO DELETE PRESS CTRL-U, THEN CTRL-END. TO EXIT PRESS CTRL-END"
EDIT RECNO()
SET MESSAGE TO " "
CLOSE DATABASES
CLEAR
RETURN
*
*
PROCEDURE SORTPACK
DO CASE
CASE CHOICE="sortit"
SET COLOR TO R+/B,R/W,RB
@ 17,25 SAY "SORTING NATOPS QUAL DATABASE"
SET COLOR TO W+/B,R/W,RB
USE C:\DATABASE\NATOPS\NATOPS
SORT ON NAME TO C:\DATABASE\NATOPS\TEMPDB
CLOSE DATABASES
DELETE FILE C:\DATABASE\NATOPS\NATOPS.DBF
RENAME C:\DATABASE\NATOPS\TEMPDB.DBF TO C:\DATABASE\NATOPS\NATOPS.DBF
USE C:\DATABASE\NATOPS\NATOPS
SET INDEX TO C:\DATABASE\NATOPS\NAMEINDEX,C:\DATABASE\NATOPS\SSNINDEX
@ 17,5 CLEAR TO 17,75
SET COLOR TO R+/B,R/W,RB
@ 17,17 SAY "SORTING COMPLETE - REINDEXING NATOPS DATABASE"
SET COLOR TO W+/B,R/W,RB
REINDEX
CLOSE DATABASES
CLEAR
RETURN
CASE CHOICE="packit"
SET COLOR TO R+/B,R/W,RB
@ 17,25 SAY "PACKING NATOPS QUAL DATABASE"
@ 18,27 SAY "TO REMOVE DELETED FILES"
SET COLOR TO W+/B,R/W,RB
USE C:\DATABASE\NATOPS\NATOPS
SET INDEX TO C:\DATABASE\NATOPS\NAMEINDEX,C:\DATABASE\NATOPS\SSNINDEX
PACK
CLOSE DATABASES
CLEAR
RETURN
ENDCASE CHOICE

```



\*

\*

# PROCEDURE BACKSEAT

DO WHILE .T.

CLEAR

@ 2,0 TO 20,79 DOUBLE

@ 3,24 SAY "VFA-125 BACKSEAT RIDER PROGRAM"

@ 4,1 TO 4,78 DOUBLE

@ 8,23 SAY "1. ADD NEW BACKSEAT RIDER"

@ 9,23 SAY "2. UPDATE EXISTING BACKSEAT RIDER"

@ 10,23 SAY "3. DELETE EXPIRED BACKSEAT RIDER"

@ 11,23 SAY "4. SORT BACKSEAT RIDER DATABASE"

@ 12,23 SAY "5. PACK BACKSEAT RIDER DATABASE"

@ 13,23 SAY "6. RETURN TO MAIN MENU"

@ 15,26 SAY "PLEASE MAKE YOUR SELECTION"

STORE 0 TO SELECTION

@ 15,53 GET SELECTION PICTURE "9" RANGE 1,6

READ

DO CASE

CASE SELECTION=1

DO ADDBACK

CASE SELECTION=2

DO UPDTBACK

CASE SELECTION=3

DO DELBACK

CASE SELECTION=4

DO SORTBACK

CASE SELECTION=5

DO PACKBACK

CASE SELECTION=6

CLEAR

RETURN

ENDCASE SELECTION

ENDDO

\*

\*

# PROCEDURE ADDBACK

CLEAR

USE C:\DBASE\NATOPS\BACKSEAT

STORE 999999999 TO ssntemp

STORE SPACE(20) TO nametemp

@ 2,0 TO 20,79 DOUBLE

@ 6,10 SAY "ENTER NAME OR SOCIAL SECURITY NUMBER OF NEW BACKSEAT RIDER"

@ 8,18 SAY "ENTER LAST NAME, FI. MI. OF BACKSEAT RIDER"

@ 9,29 GET nametemp PICTURE "!!!!!!!!!!!!!!!!!!!!!!"

@ 11,36 SAY "- OR -"

@ 13,14 SAY "ENTER SOCIAL SECURITY NUMBER OF NEW BACKSEAT RIDER"

@ 14,33 GET ssntemp PICTURE "@R ###-##-####"

READ

IF nametemp<>SPACE(20)

```

SET INDEX TO C:\DBASE\NATOPS\NAMEBACK,C:\DBASE\NATOPS\SSNBACK
GO TOP
SEEK TRIM(nametemp)
IF NAME=TRIM(nametemp)
    SET COLOR TO R+/B,R/W,RB
    @ 16,16 SAY "THIS BACKSEAT RIDER IS ALREADY IN THE DATABASE"
    @ 17,14 SAY "PRESS ANY KEY TO RETURN TO THE BACKSEAT RIDER MENU"
    SET COLOR TO W+/B,R/W,RB
    WAIT ""
    CLOSE DATABASES
    CLEAR
    RETURN
ENDIF
ENDIF
IF ssntemp<>999999999
    SET INDEX TO C:\DBASE\NATOPS\SSNBACK,C:\DBASE\NATOPS\NAMEBACK
    GO TOP
    SEEK ssntemp
    IF ssntemp=SSN
        SET COLOR TO R+/B,R/W,RB
        @ 16,16 SAY "THIS BACKSEAT RIDER IS ALREADY IN THE DATABASE"
        @ 17,14 SAY "PRESS ANY KEY TO RETURN TO THE BACKSEAT RIDER MENU"
        SET COLOR TO W+/B,R/W,RB
        WAIT ""
        CLOSE DATABASES
        CLEAR
        RETURN
    ENDIF
ENDIF
IF (ssntemp=999999999 .AND. nametemp=SPACE(20))
    SET COLOR TO R+/B,R/W,RB
    @ 16,31 SAY "NO ENTRY WAS MADE"
    @ 17,14 SAY "PRESS ANY KEY TO RETURN TO THE BACKSEAT RIDER MENU"
    SET COLOR TO W+/B,R/W,RB
    WAIT ""
    CLOSE DATABASES
    CLEAR
    RETURN
ENDIF
SET FORMAT TO C:\DBASE\NATOPS\BACKSEAT
SET MESSAGE TO "WHEN NEW RECORD ENTRIES ARE COMPLETE PRESS CTRL-END"
APPEND
SET MESSAGE TO " "
CLOSE DATABASES
CLEAR
RETURN
*
*
PROCEDURE UPDTBACK
CLEAR

```

```

USE C:\DATABASE\NATOPS\BACKSEAT
STORE 999999999 TO ssntemp
STORE SPACE(20) TO nametemp
@ 2,0 TO 20,79 DOUBLE
@ 6,5 SAY "ENTER NAME OR SOCIAL SECURITY NUMBER OF BACKSEAT RIDER TO BE"
@ 6,66 SAY "UPDATED"
@ 8,18 SAY "ENTER LAST NAME, FI. MI. OF BACKSEAT RIDER"
@ 9,29 GET nametemp PICTURE "!!!!!!!!!!!!!!!!!!!!!!"
@ 11,36 SAY "- OR -"
@ 13,9 SAY "ENTER SOCIAL SECURITY NUMBER OF BACKSEAT RIDER TO BE UPDATED"
@ 14,33 GET ssntemp PICTURE "@R ###-##-####"
READ
IF nametemp<>SPACE(20)
    SET INDEX TO C:\DATABASE\NATOPS\NAMEBACK,C:\DATABASE\NATOPS\SSNBACK
    GO TOP
    SEEK TRIM(nametemp)
    IF EOF()
        SET COLOR TO R+/B,R/W,RB
        @ 16,14 SAY "THIS BACKSEAT RIDER DOES NOT EXIST IN THE DATABASE"
        @ 17,14 SAY "PRESS ANY KEY TO RETURN TO THE BACKSEAT RIDER MENU"
        SET COLOR TO W+/B,R/W,RB
        WAIT ""
        CLOSE DATABASES
        CLEAR
        RETURN
    ENDIF
ENDIF
IF ssntemp<>999999999
    SET INDEX TO C:\DATABASE\NATOPS\SSNBACK,C:\DATABASE\NATOPS\NAMEBACK
    GO TOP
    SEEK ssntemp
    IF EOF()
        SET COLOR TO R+/B,R/W,RB
        @ 16,14 SAY "THIS BACKSEAT RIDER DOES NOT EXIST IN THE DATABASE"
        @ 17,14 SAY "PRESS ANY KEY TO RETURN TO THE BACKSEAT RIDER MENU"
        SET COLOR TO W+/B,R/W,RB
        WAIT ""
        CLOSE DATABASES
        CLEAR
        RETURN
    ENDIF
ENDIF
IF (ssntemp=999999999 .AND. nametemp=SPACE(20))
    SET COLOR TO R+/B,R/W,RB
    @ 16,31 SAY "NO ENTRY WAS MADE"
    @ 17,14 SAY "PRESS ANY KEY TO RETURN TO THE BACKSEAT RIDER MENU"
    SET COLOR TO W+/B,R/W,RB
    WAIT ""
    CLOSE DATABASES
    CLEAR

```

```

RETURN
ENDIF
SET FORMAT TO C:\DBASE\NATOPS\BACKSEAT
SET MESSAGE TO "WHEN UPDATED RECORD ENTRIES ARE COMPLETE PRESS CTRL-END"
EDIT
SET MESSAGE TO " "
CLOSE DATABASES
CLEAR
RETURN
*
*
PROCEDURE DELBACK
CLEAR
USE C:\DBASE\NATOPS\BACKSEAT
STORE 999999999 TO ssntemp
STORE SPACE(20) TO nametemp
@ 2,0 TO 20,79 DOUBLE
@ 6,4 SAY "ENTER NAME OR SOCIAL SECURITY NUMBER OF BACKSEAT RIDER TO BE
DELETED"
@ 8,18 SAY "ENTER LAST NAME, FI. MI. OF BACKSEAT RIDER"
@ 9,29 GET nametemp PICTURE "!!!!!!!!!!!!!!!!!!!!!!"
@ 11,36 SAY "- OR -"
@ 13,9 SAY "ENTER SOCIAL SECURITY NUMBER OF BACKSEAT RIDER TO BE DELETED"
@ 14,33 GET ssntemp PICTURE "@R ###-##-####"
READ
IF nametemp<>SPACE(20)
SET INDEX TO C:\DBASE\NATOPS\NAMEBACK,C:\DBASE\NATOPS\SSNBACK
GO TOP
SEEK TRIM(nametemp)
IF EOF()
SET COLOR TO R+/B,R/W,RB
@ 16,14 SAY "THIS BACKSEAT RIDER DOES NOT EXIST IN THE DATABASE"
@ 17,14 SAY "PRESS ANY KEY TO RETURN TO THE BACKSEAT RIDER MENU"
SET COLOR TO W+/B,R/W,RB
WAIT ""
CLOSE DATABASES
CLEAR
RETURN
ENDIF
ENDIF
IF ssntemp<>999999999
SET INDEX TO C:\DBASE\NATOPS\SSNBACK,C:\DBASE\NATOPS\NAMEBACK
GO TOP
SEEK ssntemp
IF EOF()
SET COLOR TO R+/B,R/W,RB
@ 16,14 SAY "THIS BACKSEAT RIDER DOES NOT EXIST IN THE DATABASE"
@ 17,14 SAY "PRESS ANY KEY TO RETURN TO THE BACKSEAT RIDER MENU"
SET COLOR TO W+/B,R/W,RB
WAIT ""

```

```

CLOSE DATABASES
CLEAR
RETURN
ENDIF
ENDIF
IF (ssntemp=999999999 .AND. nametemp=SPACE(20))
SET COLOR TO R+/B,R/W,RB
@ 16,31 SAY "NO ENTRY WAS MADE"
@ 17,14 SAY "PRESS ANY KEY TO RETURN TO THE BACKSEAT RIDER MENU"
SET COLOR TO W+/B,R/W,RB
WAIT ""
CLOSE DATABASES
CLEAR
RETURN
ENDIF
SET FORMAT TO C:\DBASE\NATOPS\BACKSEAT
SET MESSAGE TO "TO DELETE PRESS CTRL-U, THEN CTRL-END. TO EXIT PRESS CTRL-END"
EDIT
SET MESSAGE TO " "
CLOSE DATABASES
CLEAR
RETURN
*
*
PROCEDURE SORTBACK
SET COLOR TO R+/B,R/W,RB
@ 17,24 SAY "SORTING BACKSEAT RIDER DATABASE"
SET COLOR TO W+/B,R/W,RB
USE C:\DBASE\NATOPS\BACKSEAT
SORT ON NAME TO C:\DBASE\NATOPS\TEMPDB
CLOSE DATABASES
DELETE FILE C:\DBASE\NATOPS\BACKSEAT.DBF
RENAME C:\DBASE\NATOPS\TEMPDB.DBF TO C:\DBASE\NATOPS\BACKSEAT.DBF
USE C:\DBASE\NATOPS\BACKSEAT
SET INDEX TO C:\DBASE\NATOPS\NAMEBACK,C:\DBASE\NATOPS\SSNBACK
@ 17,5 CLEAR TO 17,75
SET COLOR TO R+/B,R/W,RB
@ 17,16 SAY "SORTING COMPLETE - REINDEXING NATOPS DATABASE"
SET COLOR TO W+/B,R/W,RB
REINDEX
CLOSE DATABASES
CLEAR
RETURN
*
*
PROCEDURE PACKBACK
SET COLOR TO R+/B,R/W,RB
@ 17,11 SAY "PACKING BACKSEAT RIDER DATABASE TO REMOVE DELETED FILES"
SET COLOR TO W+/B,R/W,RB
USE C:\DBASE\NATOPS\BACKSEAT

```

```

SET INDEX TO C:\DBASE\NATOPS\NAMEBACK,C:\DBASE\NATOPS\SSNBACK
PACK
CLOSE DATABASES
CLEAR
RETURN
*
*
PROCEDURE REPORTS
DO WHILE .T.
    CLEAR
    @ 2,0 TO 20,79 DOUBLE
    @ 3,25 SAY "SAFETY OFFICE REPORT GENERATOR"
    @ 4,1 TO 4,78 DOUBLE
    @ 8,25 SAY "1. PRINT NATOPS QUAL LIST"
    @ 9,25 SAY "2. PRINT NATOPS DATABASE"
    @ 10,25 SAY "3. PRINT BACKSEAT LIST"
    @ 11,25 SAY "4. RETURN TO MAIN MENU"
    @ 13,28 SAY "PLEASE MAKE YOUR SELECTION"
    STORE 0 TO SELECTION
    @ 13,55 GET SELECTION PICTURE "9" RANGE 1,4
    READ
    DO CASE
        CASE SELECTION=1
            DO QUALLIST
        CASE SELECTION=2
            DO NATOPLST
        CASE SELECTION=3
            DO SEATLIST
        CASE SELECTION=4
            CLEAR
            RETURN
    ENDCASE SELECTION
ENDDO
*
*
PROCEDURE QUALLIST
CLEAR
STORE CTOD("01/01/00") TO NULL
STORE CTOD(" / / ") TO OLD,NEW,NEXT
STORE SPACE(20) TO SIGNER
STORE SPACE(5) TO RANKS,SERVICE
@ 2,0 TO 20,79 DOUBLE
@ 6,18 SAY "ENTER ENDING DATE OF PREVIOUS MONTH"
@ 6,54 GET OLD FUNCTION "D"
@ 7,18 SAY "ENTER ENDING DATE OF PRESENT MONTH"
@ 7,54 GET NEW FUNCTION "D"
@ 8,18 SAY "ENTER ENDING DATE OF NEXT MONTH"
@ 8,54 GET NEXT FUNCTION "D"
@ 9,16 SAY "ENTER NAME OF REPORT SIGNER"
@ 9,43 GET SIGNER PICTURE "!!!!!!!!!!!!!!!!!!!!!!"

```

```

@ 10,16 SAY "ENTER RANK OF REPORT SIGNER"
@ 10,44 GET RANKS PICTURE "!!!!"
@ 11,16 SAY "ENTER SERVICE OF REPORT SIGNER"
@ 11,47 GET SERVICE PICTURE "!!!!"
SET COLOR TO R+*/B,R/W,BR
@ 13,16 SAY "ENSURE THE PRINTER IS ON AND PAPER LOADED"
SET COLOR TO W+*/B,R/W,BR
@ 16,22 SAY "CONTINUE WITH PRINT JOB (Y/N)"
STORE " " TO PROCEED
@ 16,52 GET PROCEED PICTURE "!"
READ
IF PROCEED<"Y"
  CLEAR
  RETURN TO MASTER
ENDIF
@ 13,5 CLEAR TO 13,75
SET COLOR TO R+*/B,R/W,BR
@ 13,25 SAY "PRINTING NATOPS QUAL REPORT"
SET COLOR TO W+*/B,R/W,BR
SET MESSAGE TO "IF PRINTING STOPS - PAUSE - THEN PRESS Y"
SET CONSOLE OFF
SET PRINT ON
  ??CHR(27)+"x"+"1"
SET PRINT OFF
@ 0,0
SET DEVICE TO PRINTER
@ 0,0 SAY " "
@ 0,66 SAY DAY(DATE())
@ 0,70 SAY UPPER(LEFT(CMONTH(DATE()),3))
@ 0,74 SAY RIGHT(DTOC(DATE()),2)
SET PRINT ON
  ??CHR(27)+"E"
SET PRINT OFF
@ 2,9 SAY "MEMORANDUM"
SET PRINT ON
  ??CHR(27)+"F"
SET PRINT OFF
@ 4,9 SAY "From: NATOPS Officer, Strike Fighter Squadron ONE TWO FIVE"
@ 5,9 SAY "To: All Squadron Aircrew"
@ 6,9 SAY "Via: Operations Officer, Strike Fighter Squadron ONE TWO FIVE"
@ 8,9 SAY "Subj: NATOPS QUAL EXPIRATION DATES FOR"
@ 8,48 SAY UPPER(CMONTH(NEW))
@ 8,PCOL() SAY "/"
@ 8,PCOL() SAY UPPER(CMONTH(NEXT))
@ 10,9 SAY "Ref: (a) OPNAVINST 3710.7P"
STORE .T. TO PARAGRAF
STORE .F. TO SPACING
STORE 11 TO x
STORE 1 TO y
DO WHILE (x>=11 .AND. x<20)

```

```

USE C:\DATABASE\NATOPS\NATOPS
IF x=17
  STORE 18 TO x
ENDIF
STORE FIELD(x) TO z
SORT TO C:\DATABASE\NATOPS\TEMP ON GRADE/D,NAME FOR (&z<=OLD .AND. &z>NULL)
USE C:\DATABASE\NATOPS\TEMP
IF RECCOUNT()>=1
  IF PARAGRAF
    @ PROW()+2,9 SAY STR(y,1)+". As per reference (a), the following"
    @ PROW(),PCOL()+1 SAY "qualifications have"
    @ PROW()+1,9 SAY "expired:"
    SET PRINT ON
    ??CHR(27)+"E"
    SET PRINT OFF
    @ PROW()+2,9 SAY "Name"
    @ PROW(),35 SAY "Rank"
    @ PROW(),50 SAY "Qual"
    @ PROW(),67 SAY "Date"
    SET PRINT ON
    ??CHR(27)+"F"
    SET PRINT OFF
    @ PROW()+1,9 SAY REPLICATE("-",65)
    STORE y+1 TO y
    STORE .F. TO PARAGRAF
  ENDIF
  IF SPACING
    @ PROW()+1,10 SAY " "
  ELSE
    STORE .T. TO SPACING
  ENDIF
  DO WHILE .NOT. EOF()
    @ PROW()+1,9 SAY NAME
    @ PROW(),35 SAY RANK
    @ PROW(),48 SAY FIELD(x)
    @ PROW(),65 SAY &z
    SKIP
    IF PROW()>=53
      EJECT
    ENDIF
  ENDDO
ENDIF
IF (x=19 .AND. .NOT. PARAGRAF)
  @ PROW()+1,9 SAY REPLICATE("-",65)
ENDIF
STORE x+1 TO x
ENDDO
STORE .T. TO PARAGRAF
STORE .F. TO SPACING
STORE 11 TO x

```



```

DO WHILE (x>=11 .AND. x<20)
  USE C:\DBASE\NATOPS\NATOPS
  IF x=17
    STORE 18 TO x
  ENDIF
  STORE FIELD(x) TO z
  SORT TO C:\DBASE\NATOPS\TEMP ON GRADE/D,NAME FOR (&z<=NEW .AND. &z>OLD)
  USE C:\DBASE\NATOPS\TEMP
  IF RECCOUNT()>=1
    IF PARAGRAF
      IF PROW()>=50
        EJECT
      ENDIF
      @ PROW()+2,9 SAY STR(y,1)+" . As per reference (a), the following"
      @ PROW(),PCOL()+1 SAY "qualifications expire"
      @ PROW()+1,9 SAY "during the month of"
      @ PROW(),PCOL()+1 SAY CMONTH(NEW)
      @ PROW(),PCOL() SAY ":"
      SET PRINT ON
      ??CHR(27)+"E"
      SET PRINT OFF
      @ PROW()+2,9 SAY "Name"
      @ PROW(),35 SAY "Rank"
      @ PROW(),50 SAY "Qual"
      @ PROW(),67 SAY "Date"
      SET PRINT ON
      ??CHR(27)+"F"
      SET PRINT OFF
      @ PROW()+1,9 SAY REPLICATE("-",65)
      STORE y+1 TO y
      STORE .F. TO PARAGRAF
    ENDIF
    IF SPACING
      @ PROW()+1,10 SAY " "
    ELSE
      STORE .T. TO SPACING
    ENDIF
    DO WHILE .NOT. EOF()
      @ PROW()+1,9 SAY NAME
      @ PROW(),35 SAY RANK
      @ PROW(),48 SAY FIELD(x)
      @ PROW(),65 SAY &z
      SKIP
      IF PROW()>=53
        EJECT
      ENDIF
    ENDDO
  ENDIF
  IF (x=19 .AND. .NOT. PARAGRAF)
    @ PROW()+1,9 SAY REPLICATE("-",65)
  
```

```

ENDIF
STORE x+1 TO x
ENDDO
STORE .T. TO PARAGRAF
STORE .F. TO SPACING
STORE 11 TO x
DO WHILE (x>=11 .AND. x<20)
USE C:\DBASE\NATOPS\NATOPS
IF x=17
STORE 18 TO x
ENDIF
STORE FIELD(x) TO z
SORT TO C:\DBASE\NATOPS\TEMP ON GRADE/D,NAME FOR (&z<=NEXT .AND. &z>NEW)
USE C:\DBASE\NATOPS\TEMP
IF RECCOUNT()>=1
IF PARAGRAF
IF PROW()>=50
EJECT
ENDIF
@ PROW()+2,9 SAY STR(y,1)+" . As per reference (a), the following"
@ PROW(),PCOL()+1 SAY "qualifications expire"
@ PROW()+1,9 SAY "during the month of"
@ PROW(),PCOL()+1 SAY CMONTH(NEXT)
@ PROW(),PCOL() SAY ":"
SET PRINT ON
??CHR(27)+"E"
SET PRINT OFF
@ PROW()+2,9 SAY "Name"
@ PROW(),35 SAY "Rank"
@ PROW(),50 SAY "Qual"
@ PROW(),67 SAY "Date"
SET PRINT ON
??CHR(27)+"F"
SET PRINT OFF
@ PROW()+1,9 SAY REPLICATE("-",65)
STORE y+1 TO y
STORE .F. TO PARAGRAF
ENDIF
IF SPACING
@ PROW()+1,10 SAY " "
ELSE
STORE .T. TO SPACING
ENDIF
DO WHILE .NOT. EOF()
@ PROW()+1,9 SAY NAME
@ PROW(),35 SAY RANK
@ PROW(),48 SAY FIELD(x)
@ PROW(),65 SAY &z
SKIP
IF PROW()>=53

```

```

    EJECT
  ENDIF
ENDDO
ENDIF
IF (x=19 .AND. .NOT. PARAGRAF)
  @ PROW()+1,9 SAY REPLICATE("-",65)
ENDIF
STORE x+1 TO x
ENDDO
@ PROW()+4,41 SAY TRIM(SIGNER)
@ PROW()+1,41 SAY TRIM(RANKS)
STORE LEN(TRIM(SIGNER))-(LEN(TRIM(RANKS))+LEN(TRIM(SERVICE))) TO s
@ PROW(),PCOL()+s SAY TRIM(SERVICE)
@ PROW()+2,9 SAY "DISTRIBUTION LIST:"
@ PROW()+1,9 SAY "CO/XO"
@ PROW()+1,9 SAY "OPS"
@ PROW()+1,9 SAY "SCHEDULES"
@ PROW()+1,9 SAY "TRAINING"
@ PROW()+1,9 SAY "READY ROOM"
@ PROW()+1,9 SAY "STRKFIGHTWINGPAC"
@ PROW()+1,9 SAY "STRKFIGHTWPNSCHOLPAC"
EJECT
SET PRINT ON
  ??CHR(27)+"x"+"0"
SET PRINT OFF
SET DEVICE TO SCREEN
SET CONSOLE ON
SET MESSAGE TO " "
CLOSE DATABASES
DELETE FILE C:\DBASE\NATOPS\TEMP.DBF
CLEAR
RETURN TO MASTER
*
*
PROCEDURE NATOPLST
SET COLOR TO R+/B,R/W,RB
@ 17,23 SAY "PRINTING NATOPS DATABASE LIST"
SET COLOR TO W+/B,R/W,RB
SET MESSAGE TO "IF PRINTING STOPS - PAUSE - THEN PRESS Y"
SET CONSOLE OFF
SET PRINT ON
  ??CHR(27)+"x"+"0"
  ??CHR(27)+"M"
SET PRINT OFF
@ 0,0
SET DEVICE TO PRINTER
@ 0,0 SAY " "
@ 0,89 SAY DAY(DATE())
@ 0,93 SAY UPPER(LEFT(CMONTH(DATE()),3))
@ 0,97 SAY RIGHT(DTOC(DATE()),2)

```

```

SET PRINT ON
  ??CHR(27)+"E"
SET PRINT OFF
@ 2,39 SAY "MASTER NATOPS ROSTER"
@ 4,33 SAY "INST"
@ 4,62 SAY "F/A-18"
@ 4,72 SAY "F/A-18"
@ 4,83 SAY "T-34"
@ 4,93 SAY "T-34"
@ 5,1 SAY "NAME"
@ 5,22 SAY "UPCHIT"
@ 5,33 SAY "CHECK"
@ 5,43 SAY "PHYS"
@ 5,53 SAY "SWIM"
@ 5,62 SAY "NATOPS"
@ 5,73 SAY "SEAT"
@ 5,82 SAY "NATOPS"
@ 5,92 SAY "EGRESS"
SET PRINT ON
  ??CHR(27)+"F"
SET PRINT OFF
USE C:\DBASE\NATOPS\NATOPS
DO WHILE .NOT. EOF()
  STORE SUBSTR(NAME,1,18) TO names
  @ PROW()+1,1 SAY names
  @ PROW(),21 SAY UPCHIT
  @ PROW(),31 SAY INSTCHECK
  @ PROW(),41 SAY PHYSIOLOGY
  @ PROW(),51 SAY SWIM
  @ PROW(),61 SAY F18NATOPS
  @ PROW(),71 SAY F18SEAT
  @ PROW(),81 SAY T34NATOPS
  @ PROW(),91 SAY T34EGRESS
  IF PROW()>=55
    EJECT
    SET PRINT ON
      ??CHR(27)+"E"
    SET PRINT OFF
    @ PROW(),35 SAY "INST"
    @ PROW(),64 SAY "F/A-18"
    @ PROW(),74 SAY "F/A-18"
    @ PROW(),85 SAY "T-34"
    @ PROW(),95 SAY "T-34"
    @ PROW()+1,1 SAY "NAME"
    @ PROW(),22 SAY "UPCHIT"
    @ PROW(),33 SAY "CHECK"
    @ PROW(),43 SAY "PHYS"
    @ PROW(),53 SAY "SWIM"
    @ PROW(),62 SAY "NATOPS"
    @ PROW(),73 SAY "SEAT"

```

```

@ PROW(),82 SAY "NATOPS"
@ PROW(),92 SAY "EGRESS"
SET PRINT ON
  ??CHR(27)+"F"
SET PRINT OFF
ENDIF
SKIP
ENDDO
EJECT
SET PRINT ON
  ??CHR(27)+"P"
SET PRINT OFF
SET DEVICE TO SCREEN
SET CONSOLE ON
SET MESSAGE TO " "
CLOSE DATABASES
CLEAR
RETURN TO MASTER
*
*
PROCEDURE SEATLIST
STORE SPACE(20) TO SIGNER
STORE SPACE(5) TO RANKS,SERVE
@ 17,10 SAY "ENTER NAME, RANK AND SERVICE OF BACKSEAT RIDER LIST SIGNER"
@ 18,10 SAY "NAME"
@ 18,15 GET SIGNER PICTURE "!!!!!!!!!!!!!!!!!!!!!!"
@ 18,39 SAY "RANK"
@ 18,44 GET RANKS PICTURE "!!!!!"
@ 18,53 SAY "SERVICE"
@ 18,61 GET SERVE PICTURE "!!!!!"
READ
@ 17,5 CLEAR TO 18,75
SET COLOR TO R+/B,R/W,RB
@ 17,28 SAY "PRINTING BACKSEAT LIST"
SET COLOR TO W+/B,R/W,RB
SET MESSAGE TO "IF PRINTING STOPS - PAUSE - THEN PRESS Y"
SET CONSOLE OFF
SET PRINT ON
  ??CHR(27)+"x"+"1"
  ??CHR(27)+"M"
SET PRINT OFF
@ 0,0
SET DEVICE TO PRINTER
@ 0,0 SAY " "
@ 0,82 SAY DAY( DATE() )
@ 0,86 SAY UPPER( LEFT( CMONTH( DATE() ),3) )
@ 0,90 SAY RIGHT( DTOC( DATE() ),2 )
SET PRINT ON
  ??CHR(27)+"E"
SET PRINT OFF

```

```

@ 2,11 SAY "MEMORANDUM"
SET PRINT ON
??CHR(27)+"F"
SET PRINT OFF
@ 4,11 SAY "From: NATOPS Officer, Strike Fighter Squadron ONE TWO FIVE"
@ 5,11 SAY "To: Operations Officer, Strike Fighter Squadron ONE TWO FIVE"
@ 6,11 SAY "Info: CDO/ODO/SDO/Schedules Officer"
@ 8,11 SAY "Subj: AERONAUTICALLY/NONAERONAUTICALLY DESIGNATED BACKSEAT
RIDER"
@ 8,76 SAY "LIST"
@ 10,11 SAY "Ref: (a) VFA-125INST 3710.4D"
@ 11,17 SAY "(b) OPNAVINST 3710.7P"
@ 13,11 SAY "1. As outlined in ref (a), the listed aeronautically designated"
@ 13,75 SAY "personnel may"
@ 14,11 SAY "occupy the aft seat of VFA-125 aircraft with the"
@ 14,60 SAY "following restrictions:"
@ 16,17 SAY "A. Only qualified IPs will be selected to conduct backseat rider"
@ 17,20 SAY "proficiency and incentive flights."
@ 18,17 SAY "B. No backseat riders in PMCF or in-flight refueling flights."
@ 19,17 SAY "C. Aeronautically designated personnel may fly in the aft cockpit"
@ 19,83 SAY "of the"
@ 20,20 SAY "following flights:"
@ 21,20 SAY "(1) All Transition Phase flights (FORM, NAV, AWT) and VIDs."
@ 22,20 SAY "(2) BFM and LAT flights with the IP's approval."
@ 23,20 SAY "(3) FWT and STRIKE sorties with Phase Head authorization."
@ 24,20 SAY "(4) CV flights with CO's or OPS Officer approval."
@ 25,20 SAY "(5) GUN Stage flights."
@ 27,11 SAY "2. The following personnel are"
SET PRINT ON
??CHR(27)+"E"
SET PRINT OFF
@ 27,42 SAY "AERONAUTICALLY DESIGNATED"
SET PRINT ON
??CHR(27)+"F"
SET PRINT OFF
@ 27,68 SAY "Backseat Riders in"
@ 28,11 SAY "accordance with ref (b)."
```

USE C:\DBASE\NATOPS\BACKSEAT

```

GO TOP
DO WHILE .NOT. EOF()
  STORE 15 TO x
  DO WHILE (x>14 .AND. x<19)
    STORE FIELD(x) TO y
    IF (&y<DATE())
      REPLACE OUTOFQUAL WITH .T.
    ENDIF
    STORE x+1 TO x
  ENDDO
  SKIP
ENDDO
```

```

SORT TO C:\DATABASE\NATOPS\TEMP ON GRADE/D,NAME FOR .NOT. OUTOFQUAL .AND.
AERODESIG
USE C:\DATABASE\NATOPS\TEMP
IF RECCOUNT()>=1
  SET PRINT ON
  ??CHR(27)+"E"
  SET PRINT OFF
  @ 30,38 SAY "RANK/"
  @ 30,51 SAY "QUAL"
  @ 30,65 SAY "QUAL"
  @ 30,79 SAY "RIDER"
  @ 31,14 SAY "NAME"
  @ 31,38 SAY "RATE"
  @ 31,49 SAY "EXPIRING"
  @ 31,63 SAY "EXP DATE"
  @ 31,78 SAY "LOCATION"
  SET PRINT ON
  ??CHR(27)+"F"
  SET PRINT OFF
  DO WHILE .NOT. EOF()
    IF PROW()>=55
      EJECT
    ENDIF
    @ PROW()+1,14 SAY NAME
    IF OFFICER
      @ PROW(),38 SAY RANK
    ENDIF
    IF ENLISTED
      @ PROW(),38 SAY RATE
    ENDIF
    STORE 15 TO x
    STORE CTOD("12/31/99") TO NULL
    DO WHILE (x>14 .AND. x<19)
      STORE FIELD(x) TO y
      IF (&y<NULL)
        STORE &y TO NULL
        STORE x TO z
      ENDIF
      STORE x+1 TO x
    ENDDO
    @ PROW(),49 SAY FIELD(z)
    @ PROW(),63 SAY NULL
    @ PROW(),78 SAY LOCATION
    SKIP
  ENDDO
ENDIF
IF PROW()>=40
  EJECT
ENDIF
@ PROW()+2,11 SAY "3. As outlined in ref (a), the listed non-aeronautically"

```

```

@ PROW(),68 SAY "designated personnel may"
@ PROW()+1,11 SAY "occupy the aft seat of VFA-125 aircraft with"
@ PROW(),56 SAY "the following restrictions:"
@ PROW()+2,17 SAY "A. Only qualified IPs will be selected to conduct backseat"
@ PROW(),76 SAY "rider"
@ PROW()+1,20 SAY "proficiency and incentive flights."
@ PROW()+1,17 SAY "B. No backseat riders in PMCF or in-flight refueling"
@ PROW(),70 SAY "flights."
@ PROW()+1,17 SAY "C. Flights are limited to Transition Phase (FORM/NAV/AWI)"
@ PROW(),75 SAY "and VID."
@ PROW()+1,17 SAY "D. Non-aeronautically designated personnel may not fly in"
@ PROW(),75 SAY "the aft cockpit"
@ PROW()+1,20 SAY "of the following flights:"
@ PROW()+1,20 SAY "(1) Night flights."
@ PROW()+1,20 SAY "(2) Flights when the field is IFR."
@ PROW()+1,20 SAY "(3) Flights to or from the CV."
@ PROW()+1,20 SAY "(4) Flights that do not begin/end at the same field."
@ PROW()+2,11 SAY "4. The following personnel are"
SET PRINT ON
  ??CHR(27)+"E"
SET PRINT OFF
@ PROW(),42 SAY "NON-AERONAUTICALLY DESIGNATED"
SET PRINT ON
  ??CHR(27)+"F"
SET PRINT OFF
@ PROW(),72 SAY "Backseat Riders in"
@ PROW()+1,11 SAY "accordance with ref (b)."
```

USE C:\DBASE\NATOPS\BACKSEAT

SORT TO C:\DBASE\NATOPS\TEMP ON GRADE/D,NAME FOR .NOT. OUTOFQUAL .AND. .NOT.;

AERODESIG

```

USE C:\DBASE\NATOPS\TEMP
IF RECCOUNT()>=1
  SET PRINT ON
    ??CHR(27)+"E"
  SET PRINT OFF
  @ PROW()+2,38 SAY "RANK/"
  @ PROW(),51 SAY "QUAL"
  @ PROW(),65 SAY "QUAL"
  @ PROW(),79 SAY "RIDER"
  @ PROW()+1,14 SAY "NAME"
  @ PROW(),38 SAY "RATE"
  @ PROW(),49 SAY "EXPIRING"
  @ PROW(),63 SAY "EXP DATE"
  @ PROW(),78 SAY "LOCATION"
  SET PRINT ON
    ??CHR(27)+"F"
  SET PRINT OFF
DO WHILE .NOT. EOF()
  IF PROW()>=55
    EJECT

```



```

ENDIF
@ PROW()+1,14 SAY NAME
IF OFFICER
    @ PROW(),38 SAY RANK
ENDIF
IF ENLISTED
    @ PROW(),38 SAY RATE
ENDIF
STORE 15 TO x
STORE CTOD("12/31/99") TO NULL
DO WHILE (x>14 .AND. x<19)
    STORE FIELD(x) TO y
    IF (&y<NULL)
        STORE &y TO NULL
        STORE x TO z
    ENDIF
    STORE x+1 TO x
ENDDO
@ PROW(),49 SAY FIELD(z)
@ PROW(),63 SAY NULL
@ PROW(),78 SAY LOCATION
SKIP
ENDDO
ENDIF
@ PROW()+4,50 SAY TRIM(SIGNER)
@ PROW()+1,50 SAY TRIM(RANKS)
STORE LEN(TRIM(SIGNER))-(LEN(TRIM(RANKS))+LEN(TRIM(SERVE))) TO s
@ PROW(),PCOL()+s SAY TRIM(SERVE)
EJECT
SET PRINT ON
    ??CHR(27)+"x"+"0"
    ??CHR(27)+"P"
SET PRINT OFF
SET DEVICE TO SCREEN
SET CONSOLE ON
SET MESSAGE TO " "
CLOSE DATABASES
DELETE FILE C:\DATABASE\NATOPS\TEMP.DBF
CLEAR
RETURN TO MASTER
*
*
PROCEDURE BACKUPS
IF backup=" "
    USE C:\DATABASE\NATOPS\UTILITY
    STORE (DATE()-BACKDATE) TO lastbackup
    CLOSE DATABASES
    IF lastbackup>=3
        STORE " " TO backup
        SET COLOR TO R+/B,R/W,BR
    
```

```

@ 18,12 SAY "IT HAS BEEN "+STR(lastbackup,2)+" DAYS SINCE THE DATABASES"+;
" WERE BACKED UP"
@ 19,8 SAY "WOULD YOU LIKE TO BACK UP THE DATABASES AT THIS TIME (Y/N)?"
@ 19,68 GET backupup PICTURE "!"
SET COLOR TO W+/B,R/W,BR
READ
ENDIF
ENDIF
IF backupup="Y"
CLEAR
@ 2,0 TO 20,79 DOUBLE
@ 3,28 SAY "DATABASE BACKUP PROGRAM"
@ 4,1 TO 4,78 DOUBLE
SET COLOR TO R+*/B,R/W,BR
@ 6,15 SAY "PLACE THE SAFETY/NATOPS DATABASE DISK IN DRIVE A"
SET COLOR TO W+/B,R/W,BR
@ 8,19 SAY "CONTINUE WITH DATABASE BACKUP? (Y/N)"
STORE " " TO CHOICE
@ 8,57 GET CHOICE PICTURE "!"
READ
IF CHOICE="Y"
@ 6,5 CLEAR TO 8,75
@ 7,13 SAY "COPYING NATOPS.DBF"
COPY FILE C:\DBASE\NATOPS\NATOPS.DBF TO A:\NATOPS.DBF
@ 8,13 SAY "COPYING NAMEINDX.NDX"
COPY FILE C:\DBASE\NATOPS\NAMEINDX.NDX TO A:\NAMEINDX.NDX
@ 9,13 SAY "COPYING SSNINDEX.NDX"
COPY FILE C:\DBASE\NATOPS\SSNINDEX.NDX TO A:\SSNINDEX.NDX
@ 7,48 SAY "COPYING BACKSEAT.DBF"
COPY FILE C:\DBASE\NATOPS\BACKSEAT.DBF TO A:\BACKSEAT.DBF
@ 8,48 SAY "COPYING NAMEBACK.NDX"
COPY FILE C:\DBASE\NATOPS\NAMEBACK.NDX TO A:\NAMEBACK.NDX
@ 9,48 SAY "COPYING SSNBACK.NDX"
COPY FILE C:\DBASE\NATOPS\SSNBACK.NDX TO A:\SSNBACK.NDX
USE C:\DBASE\NATOPS\UTILITY
REPLACE BACKDATE WITH DATE()
CLOSE DATABASES
@ 14,48 SAY "COPYING UTILITY.DBF"
COPY FILE C:\DBASE\NATOPS\UTILITY.DBF TO A:\UTILITY.DBF
@ 16,18 SAY "BACKUP COMPLETE. PRESS ANY KEY TO CONTINUE"
WAIT ""
ENDIF
ENDIF
CLEAR
RETURN

```

## LIST OF REFERENCES

1. Office of the Chief of Naval Operations, *NATOPS General Flight and Operating Instructions OPNAV Instruction 3710.7Q*, Department of the Navy, 1 May 1995
2. Naval Air Systems Command, A1-F18AC-NFM-000, *NATOPS Flight Manual, Navy Model F/A-18A/B/C/D*, 15 January 1991.
3. Naval Air Systems Command, NAVAIR 01-T34AAC-1, *NATOPS Flight Manual, Navy Model T-34C Aircraft*, 1 December 1988.
4. Senn, J. A., *Information Systems in Management*, Wadsworth Publishing Company, Inc., 1990.
5. Althawadi, S. I. and Hubbard, B. D., *Analysis, Design and Implementation of a Database System for the Systems Management Curricular Office*, Naval Postgraduate School, 1994.
6. Batini, Ceri and Navathe, *Conceptual Database Design, An Entity-Relationship Approach*, The Benjamin/Cummings Publishing Company, Inc., 1992.
7. Kroenke, D. M., *Database Processing, Fundamentals, Design and Implementation*, Prentice Hall, 1995.



## BIBLIOGRAPHY

Ariyadi, D. M., *Design and Implementation of a personal Database System for Indonesian Naval Officers*, Naval Postgraduate School, 1986.

Ashton-Tate, *Learning and Using dBASE III Plus*, Ashton-Tate, 1986.

Ashton-Tate, *Programming With dBASE III Plus*, Ashton-Tate, 1986.

Borland, Inc., *Borland dBASE for Windows Version 5.0 - Language Reference*, Borland, Inc., 1994.

Borland, Inc., *Borland dBASE for Windows Version 5.0 - Programming Guide*, Borland, Inc., 1994.

Kohlheim, M. T., *Analysis, Design and Implementation of a Database Management System for the Naval Postgraduate School Alumni Association*, Naval Postgraduate School, 1992.

Liskin, M., *dBASE III Plus, The Pocket Reference*, Osborne McGraw-Hill, 1988.

Tsongas, G. C., *Design and Implementation of a database Management System to Support Administrative Activities Onboard Hellenic Naval Vessels*, Naval Postgraduate School, 1994.



## INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center ..... 2  
Cameron Station  
Alexandria, Virginia 22304-6145
2. Library, Code 52 ..... 2  
Naval Postgraduate School  
Monterey, California 93943-5101
3. Naval Safety Center, Code 101 ..... 1  
375 A Street  
Norfolk, Virginia 23511-4399
4. School of Aviation Safety, Code 10 ..... 1  
Naval Postgraduate School  
Monterey, California 93943
5. VFA-125 ..... 1  
Aviation Safety Officer  
NAS Lemoore, California 93245
6. Hemant K. Bhargava, Code SM/BH ..... 1  
Naval Postgraduate School  
Monterey, California 93943
7. Douglas E. Brinkley, Code SM/BI ..... 1  
Naval Postgraduate School  
Monterey, California 93943
8. Terryll R. Martin, Code OR/TM ..... 1  
Naval Postgraduate School  
Monterey, California 93943